CHANNEL-BED DEGRADATION IN MAJOR OKLAHOMA STREAMS

VOLUME I of V: ARKANSAS RIVER

Final Report
ODOT Item Number 2191

by

A. K. Tyagi, Ph.D., P.E.
Director

and

Moti KC
Research Associate

Oklahoma Infrastructure Consortium

School of Civil and Environmental Engineering

Oklahoma State University

Stillwater, OK 74078

December 2007

The contents of this report reflect the views of the authors who are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the views of the Oklahoma Department of Transportation or the Federal Highway Administration. This report does not constitute a standard, specification or regulation. While trade names may be used in this report, it is not intended as an endorsement of any machine, contractor, process or product.

TECHNICAL REPORT DOCUMENTATION PAGE

1. Report No. FHWA/07(06), vol. I of V	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle Channel-Bed Degradation in Major Oklahoma Streams Arkansas River		5. Report Date December 2007 6. Performing Organization Code
7. Authors Avdhesh K. Tyagi and Moti KC		8. Performing Organization Report No.
9. Performing Organization Name and Address Avdhesh K. Tyagi School of Civil and Environmental Engineering Oklahoma State University Stillwater, OK 74078		10. Work Unit No. 11. Contract or Grant No. Item 2191
12. Sponsoring Agency Name and Address Oklahoma Department of Transportation Planning & Research Division 200 N.E. 21st Street, Room 3A7 Oklahoma City, OK 73105		13. Type of Report and Period Covered Final Report 14. Sponsoring Agency Code HTFS-16

Supplementary Notes

15. Abstract

The purpose of this research is to analyze the flowline data and relate it to the degradation of the river bed at bridge locations in the river. This information may then be used to replace or rehabilitate those bridges that experienced severe degradation.

This report evaluates channel degradation in 252-mile reach of Arkansas River in Oklahoma. In this study, the 252 mile river length is divided into two Reaches: Reach 1- Kaw Lake to Keystone Dam, and Reach 2- Keystone Dam to Webbers Falls Dam. The flowlines of Arkansas River in Oklahoma were observed for a long-term period. In Reach-1, river station (RS) 3 shows the maximum degradation of 3 feet in 30 years from 1963 to 1993. Similarly, in Reach-2, RS 16, located 7 miles downstream of Webbers Falls Dam shows the maximum degradation of 12 feet in 28 years. On the other hand, channel aggradation of 3.50 feet is observed at RS 1 in Reach-1. The study of river-bed elevation change elucidates that the Arkansas River is not stable for 80.5 miles below Keystone Dam.

The I-40 bridge located at RS 16 (Bridge Key b17051) has experienced a degradation degradation of 12.2 feet in 32 years. When this bridge is replaced in replacement cycle, it is recommended that a detailed hydraulic and geotechnical analysis be performed before reconstruction.

It is recommended that degradation of tributaries is evaluated to determine the structures where flowline is severely degrading in Arkansas River basin.

17. Key Words Degradation, Arkansas River, Dam, and flowlines	18. Distribution Statement No restriction. This publication is available from the office of Planning & Research Division, Oklahoma DOT.

19. Security Classification. (of this report) Unclassified	20. Security Classification. (of this page) Unclassified	21. No. of Pages 68	22. Price

SI (METRIC) CONVERSION FACTORS

Approximate Conversions to SI Units

Symbol	When you know	Multiply by	To Find	Symbol
	LENGTH			
in	inches	25.40	millimeters	mm
ft	feet	0.3048	meters	m
yd	yards	0.9144	meters	m
mi	miles	1.609	kilometers	km
	AREA			
in^2	square inches	645.2	square millimeters	mm^2
ft^2	square feet	0.0929	square meters	m^2
yd^2	square yards	0.8361	square meters	m^2
ac	acres	0.4047	hectacres	ha
mi^2	square miles	2.590	square kilometers	km^2
	VOLUME			
fl oz	fluid ounces	29.57	milliliters	mL
gal	gallon	3.785	liters	L
ft^3	cubic feet	0.0283	cubic meters	m^3
yd^3	cubic yards	0.7645	cubic meters	m^3
	MASS			
oz	ounces	28.35	grams	g
lb	pounds	0.4536	kilograms	kg
T	short tons (2000 lb)	0.907	megagrams	Mg
	TEMPERATURE (exact)			
°F	degrees Fahrenheit	(°F-32)/1.8	degrees Celsius	°C
	FORCE and PRESSURE or STRESS			
lbf	poundforce	4.448	Newtons	N
lbf/in^2	poundforce per square inch	6.895	kilopascals	kPa

Approximate Conversions from SI Units

Symbol	When you know	Multiply by	To Find	Symbol
	LENGTH			
mm	millimeters	0.0394	inches	in
m	meters	3.281	feet	ft
m	meters	1.094	yards	yds
km	kilometers	0.6214	miles	mi
	AREA			
mm^2	square millimeters	0.00155	square inches	in^2
m^2	square meters	10.764	square feet	ft^2
m^2	square meters	1.196	square yards	yd^2
ha	hectacres	2.471	acres	ac
km^2	square kilometers	0.3861	square miles	mi^2
	VOLUME			
mL	milliliters	0.0338	fluid ounces	fl oz
L	liters	0.2642	gallon	gal
m^3	cubic meters	35.315	cubic feet	ft^3
m^3	cubic meters	1.308	cubic yards	yd^3
	MASS			
g	grams	0.0353	ounces	oz
kg	kilograms	2.205	pounds	lb
Mg	megagrams	1.1023	short tons (2000 lb)	T
	TEMPERATURE (exact)			
°C	degrees Fahrenheit	9/5(°C)+32	degrees Celsius	°F
	FORCE and PRESSURE or STRESS			
N	Newtons	0.2248	poundforce	lbf
kPa	kilopascals	0.1450	poundforce per square inch	lbf/in^2

CONTENTS

Page

I. Introduction 1

II. Study area 3

III. Hydrology 6

IV. Analysis of cross-sectional geometry 18

V. Analysis of flowline profile 30

VI. Discussion of results 46

VI. Conclusions and recommendation 49

VII. References 50

APPENDEX A – Tables of cross-sectional geometries and flowlines 52

APPENDEX B – Flow path of Arkansas River in Oklahoma 67

FIGURES

Page

1. Location of Study points in Arkansas River, and USGS gage station along Arkansas River 5

2. Annual peak streamflow in Arkansas River at Ralston (USGS 07152500), OK 10

3. Annual peak streamflow in Arkansas River at Tulsa (USGS 07164500), OK 11

4. Annual peak streamflow in Arkansas River at Haskell (USGS 07165570), OK 12

5. Annual peak streamflow in Arkansas River at Muskogee (USGS 07194500), OK 13

6. Schematic diagram of sinuosity of natural channels 17

7. Cross-section at bridge (Bridge No. 19112 and RS 1) on SH 11, Arkansas River, OK 20

8. Cross-section at bridge (Bridge No. 04603 and RS 2) on SH 18, Arkansas River, OK 21

9. Cross-section at bridge (Bridge No. 19279 and RS 4) on SH 51, Arkansas River, OK 22

10. Cross-section at bridge (Bridge No. 22107 and RS 9) on US 64, Arkansas River, OK 23

11. Cross-section at bridge (Bridge No. 19638 an RS 10) on SH 72, Arkansas River, OK 24

12. Cross-section at bridge (Bridge No. 19512 and RS 11) on SH 104, Arkansas River, OK 25

13. Cross-section at bridge (Bridge No. 22425 and RS 12) on US 69, Arkansas River, OK 26

14. Cross-section at bridge (Bridge No. 20327 and RS 13) on US 69, Arkansas River, OK 27

15. Cross-section at bridge (Bridge No. 19835 and RS 14) on SH 16, Arkansas River, OK 28

16. Cross-section at bridge (Bridge No. 17051 and RS 16) on I 40, Arkansas River, OK 29

17. Trend line of stream-bed elevation changes 31

18. The best fit line of stream-bed elevation change rate (ft/yr) versus river length in miles 32

19-28 Longitudinal Profile of Arkansas River Bed, Oklahoma 35-45

TABLES

Page

1. Description of USGS gage stations 7

2. Sinuosity and slope of Arkansas River for Study Reach 1 and 2 16

3. Summary of channel bed elevation change, Arkansas River 33

4. Flow line interpolated data at 5-year intervals, Arkansas River 34

5. Summary of channel bed degradation, Arkansas River 47

6. Summary of bridges with degradation in five river basins 48

I. INTRODUCTION

Natural alluvial rivers are seldom in a state of equilibrium. The fluvial process in an alluvial river is a dynamic system which is subject to continuous changes such as changes in discharge, flow characteristics, sediment injection by tributaries, bed material composition, and characteristics of the sediment complex. Man-made activities and natural events are the major factors which disturb the stability of a river, causing readjustment of energy slope, sediment load, and cross-sectional geometry. If the stream-bed continues to lower as a result of the aforementioned activities, it is called “degradation” and, if the reverse is true, it is called “aggradation”.

A river channel is considered stable if the stream-bed does not change its average bed elevation over a relatively long river reach and long period of time. Whether the hydraulic, hydrologic, and sedimentological characteristics of the alluvial rivers are altered naturally or by human interference, the river will adjust dynamically and geometrically as the fluvial system seeks to establish a state of equilibrium. The river equilibrium concept was explained by Macklin (1948) as the “graded” river in which channel size, cross-sectional shape, and slope are adjusted to the quantities of sediment and water transported so that the river-bed neither degrades nor aggrades.

Most of the degradation problems in alluvial rivers are not related to natural river changes, but are caused by dams or reservoirs which completely intercept the motion of sediment (Tinney, 1962). The post-dam annual suspended-sediment load below 5 miles downstream of Gavin Points Dam in the

Colorado River was observed to be less than 1 percent of the pre-dam load (Williams and Wolman, 1985). As a result of dam or reservoir construction on a river, the river downstream of a dam or reservoir begins to scour, and this lowers its channel bed as the sediment-depleted water emerging from the dam attempts to replenish its sediment load.

Graf (1999) reports that the impact of dams on river discharge is several times greater than impacts deemed likely as a result of global climate change. Physical changes to stream channels below dams can range from bed degradation and narrowing, to changes in channel-bed texture or armouring, to bed aggradation, bar construction, and channel widening, to no measurable changes whatsoever (Petts, 1979; Wolman, 1984; Chien, 1985; Gilvear and Winterbottom, 1992; Collier et al., 1985; Fassnacth and McClure, 2003). Numerous dams such as Kaw Lake Dam, Keystone Lake Dam, Webbers Falls Reservoir Dam, and Robert S. Kerr Dam have been built on Arkansas River in Oklahoma.

The purpose of this research is to analyze the flowline data and relate it to the degradation of the river bed different at bridge locations in the river. This information may then be used to replace or rehabilitate those bridges that experienced severe degradation.

II. STUDY AREA

The Arkansas River is a major tributary of the Mississippi River. The Arkansas River generally flows to the east and southeast, and traverses the states of Colorado, Kansas, Oklahoma, and Arkansas. At 1,469 miles (2,364 km), it is the sixth longest river in the United States (Kammerer, 1990). The river originates in the Colorado Rockies in Lake County near Leadville, Colorado, and ends at the historic site of Napoleon, Arkansas. It is the second-longest tributary in the Mississippi-Missouri system. It has a drainage basin of nearly 195,000 square miles. In terms of volume, it is smaller than both the Missouri and Ohio, with a mean discharge of 8,460 ft^3/s (240 m^3/s).

In Oklahoma, Arkansas River flows through nine counties namely: Kay, Noble, Osage, Pawnee, Tulsa, Wagoner, Muskogee, Sequoyah, and Haskell. The Arkansas River and its tributaries drain two-thirds of the state's northern area. Major tributaries to the Arkansas River include Canadian River, Cimarron River, Verdigris River, and Illinois River.

The focus of this study is the middle 252-mile reach of the Arkansas River between State Highway 11 crossing in the Kaw Lake near the Oklahoma-Kansas and the I-40 crossing upstream of the Robert S. Kerr reservoir in Oklahoma (Fig.1). The Arkansas River in the study reach is characterized by meandering and the fine & coarse sand-mix channel. The channel slope averages about 2.1 feet per mile and the river-bank height varies from 30 to 55 feet. Throughout the study reach, the Arkansas River has been impounded in three large reservoirs: Kaw Lake, Keystone Lake, and Webbers Falls Reservoir.

Kaw Lake Dam is on the Arkansas River at mile 653.7 in Osage County, about 8 miles east of Ponca City, Oklahoma. According to Oklahoma Water Resources Board (1990), the lake has a shore length of about 168 miles, a drainage area of 46,530 square miles, and a flood pool capacity of about 1,348,000 acre-feet. The lake occupies 38,020 acres of area for conservation pool. Keystone Lake Dam on the Arkansas River at mile 538.8, is located in Tulsa County, 8.5 miles west of Sand Springs. The dam has a shore length of 330 miles, a drainage area of 74,504 square miles, and a flood pool capacity of 1,737,600 acre-feet. The coverage area for the conservational pool is 54,320 acres. Webbers Falls Dam at navigation mile of 368.9 is located in Muskogee County about 5 miles northwest of the town of Webbers Falls. This reservoir covers 11,600 acres of area for conservation pool and the reservoir has 97,033 square miles of drainage area and a normal pool capacity of 170,100 acre-feet. The construction of Kaw Lake Dam, Keystone Lake Dam and Webbers Falls Dam were completed in 1976, 1964 and 1970 respectively, the Army Corps of Engineers.

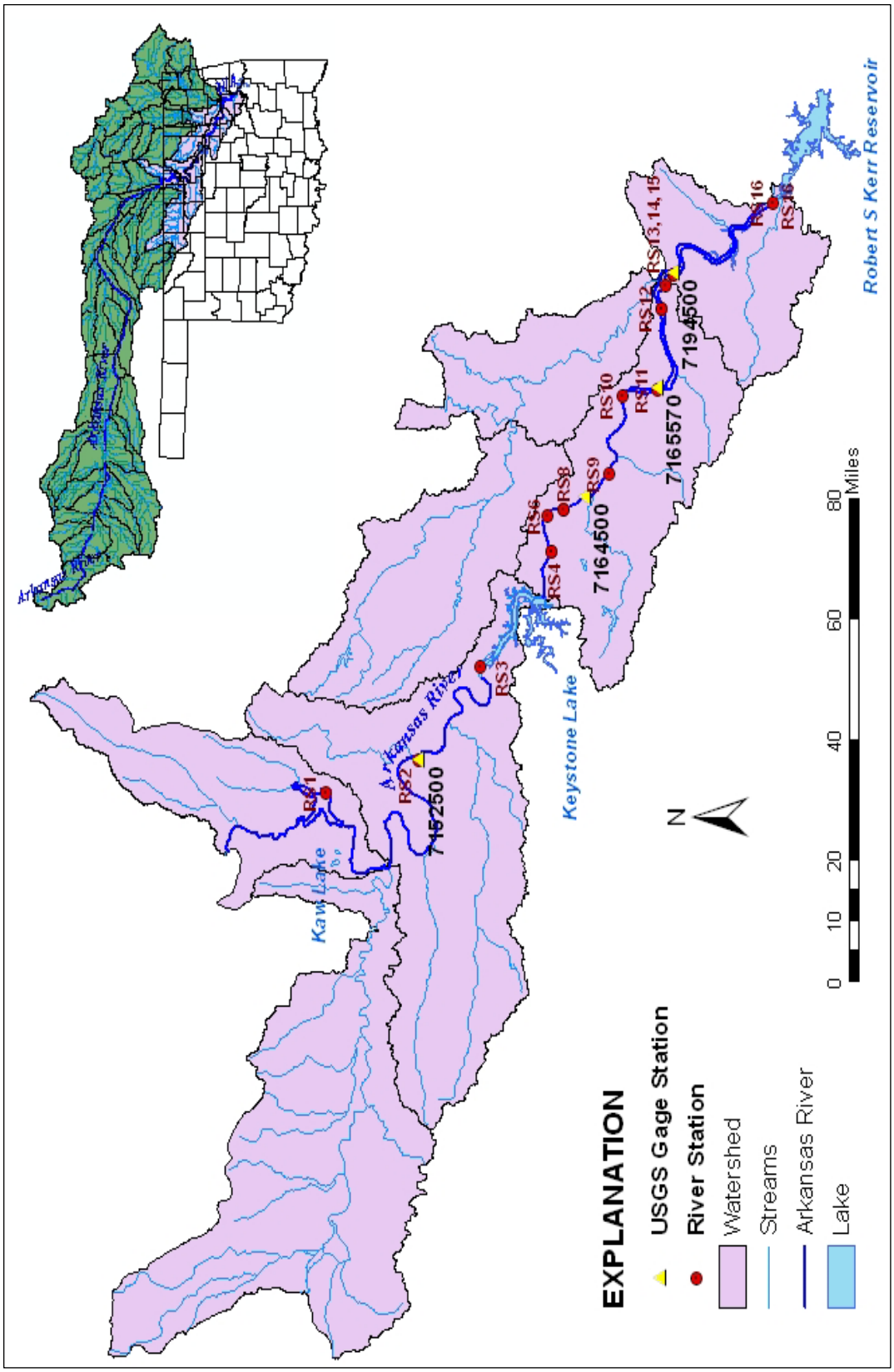


Figure 1. Location of study points and USGS gage stations along the Arkansas River

III. HYDROLOGY

When the hydrology of a stream changes, the physical characteristics of the stream changes also. Such changes include stream channel-bed degradation, stream widening, and stream bank erosion. As the stream profile degrades and the stream widens to accommodate higher flows, stream bank erosions increase along with increases in sediment loads. USGS stream flow gage stations along the Arkansas River have been included in the study reach (Fig. 1). The four active USGS gage stations in the study reach are described in the Table 1 below.

Table 1. Description of USGS gage stations

Data Locations and descriptions	Data Available
USGS 07152500 Arkansas River at Ralston, OK Pawnee County, Oklahoma Hydrologic Unit Code 11060006 Latitude 36°30'15", Longitude 96°43'41" NAD27 Drainage area 54,465 square miles Contributing drainage area 46,850 square miles Gage datum 776.70 feet above sea level NGVD29	1925-2007
USGS 07164500 Arkansas River at Tulsa, OK Tulsa County, Oklahoma Hydrologic Unit Code 11110101 Latitude 36°08'26", Longitude 96°00'22" NAD27 Drainage area 74,615 square miles Contributing drainage area 62,074 square miles Gage datum 615.23 feet above sea level NGVD29	1925-2007
USGS 07165570 Arkansas River near Haskell, OK Wagoner County, Oklahoma Hydrologic Unit Code 11110101 Latitude 35°49'15", Longitude 95°38'19" NAD27 Drainage area 75,473 square miles Contributing drainage area 62,932 square miles Gage datum 530 feet above sea level NGVD29	1972-2007

Table 1. Continued

USGS 07194500 Arkansas River near Muskogee, OK Muskogee County, Oklahoma Hydrologic Unit Code 11110102 Latitude 35°46'10", Longitude 95°17'49" NAD27 Drainage area 96,674 square miles Contributing drainage area 84,133 square miles Gage datum 471.38 feet above sea level NGVD29	2003-2007

Annual peak discharge is the annual instantaneous maximum discharge. Changes in land use and urbanization can affect flood discharges which impact the size and stability of channels. Systematic increases or decreases in the magnitude of annual peak discharges along with the slope and width of the stream channel can cause the stream-bed to either degrade or to aggrade. The maximum scour should occur during peak discharge due to the greater stream power on the channel-bed and the shear stress (Capesius and Lehman, 2001).

To study the stream-bed scour, annual peak discharge plots were downloaded from USGS gage stations to evaluate the historical flood occurrences. In June 1923, the entire drainage area between Hutchinson and Arkansas City received excessive rains. According to USGS Arkansas Water Science, on June 8 and 9, Wichita reported 7.06 inches, Newton 5.75 inches and Arkansas city 2.06 inches of rain. Due to excessive rainfalls in this region, maximum steam flows were recorded at 200,000 cfs in Ralston OK (Fig. 2) and 244,000 cfs in Tulsa (Fig.3). In 1943 the peak stream flow of 700,000 cfs recorded in Muskogee (Fig. 5) which mimics the flood of 1943, and the peak stream flow of 307,000 cfs in Tulsa (Fig. 3) is due to the flood in 1987.

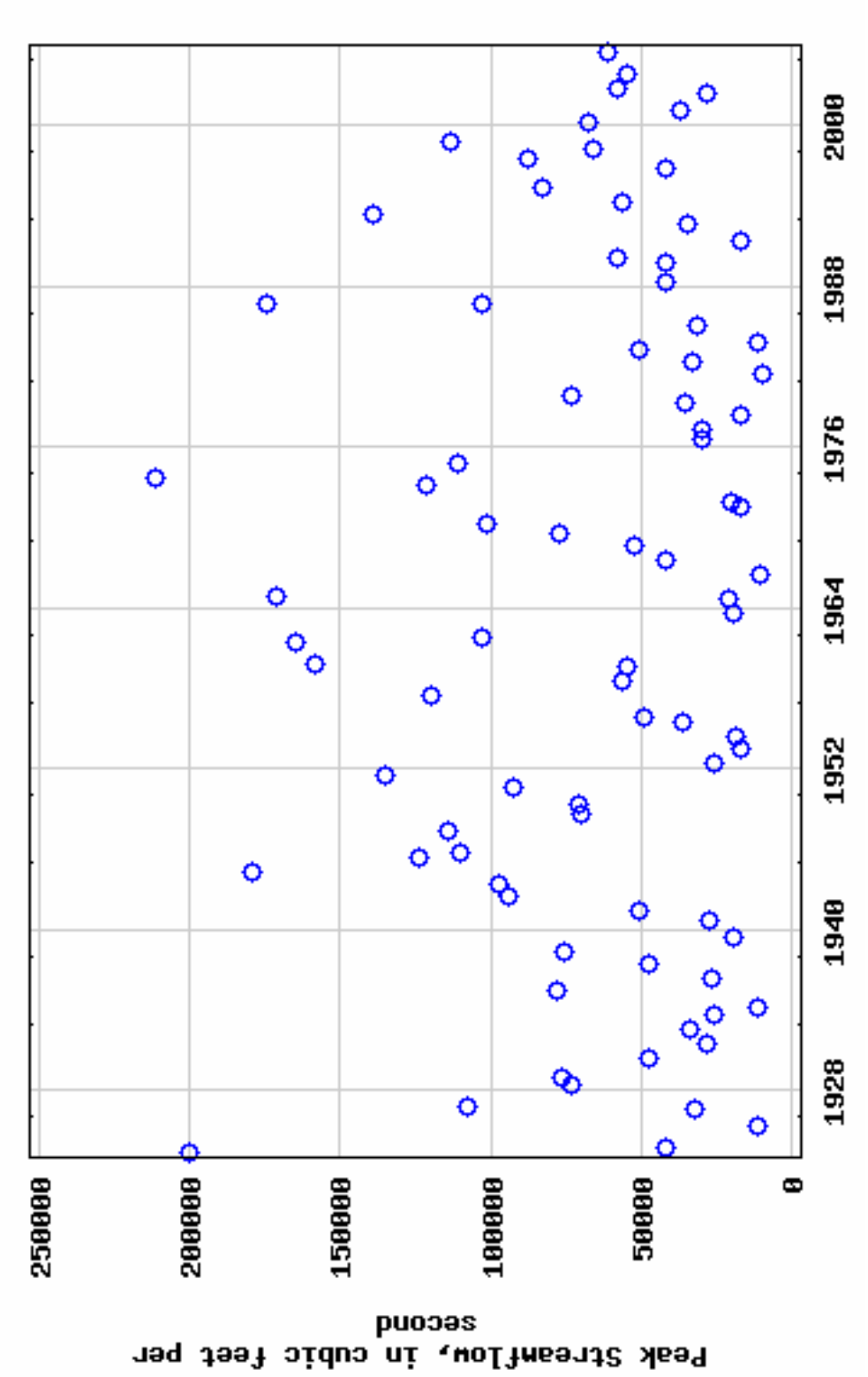


Figure 2. Annual peak streamflow in Arkansas River at Ralston (USGS 07152500), OK

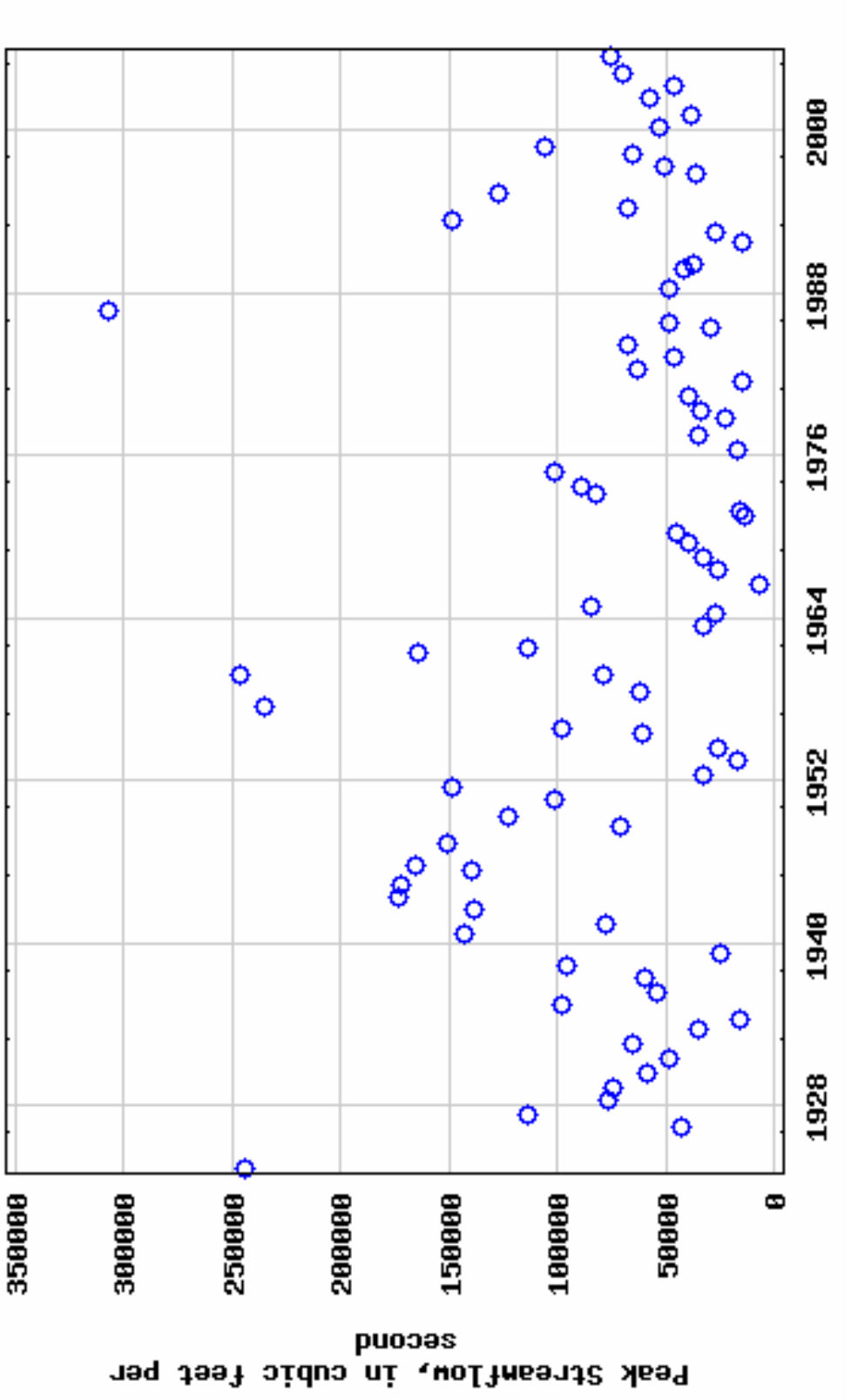


Figure 3. Annual peak streamflow in Arkansas River at Tulsa (USGS 07164500), OK

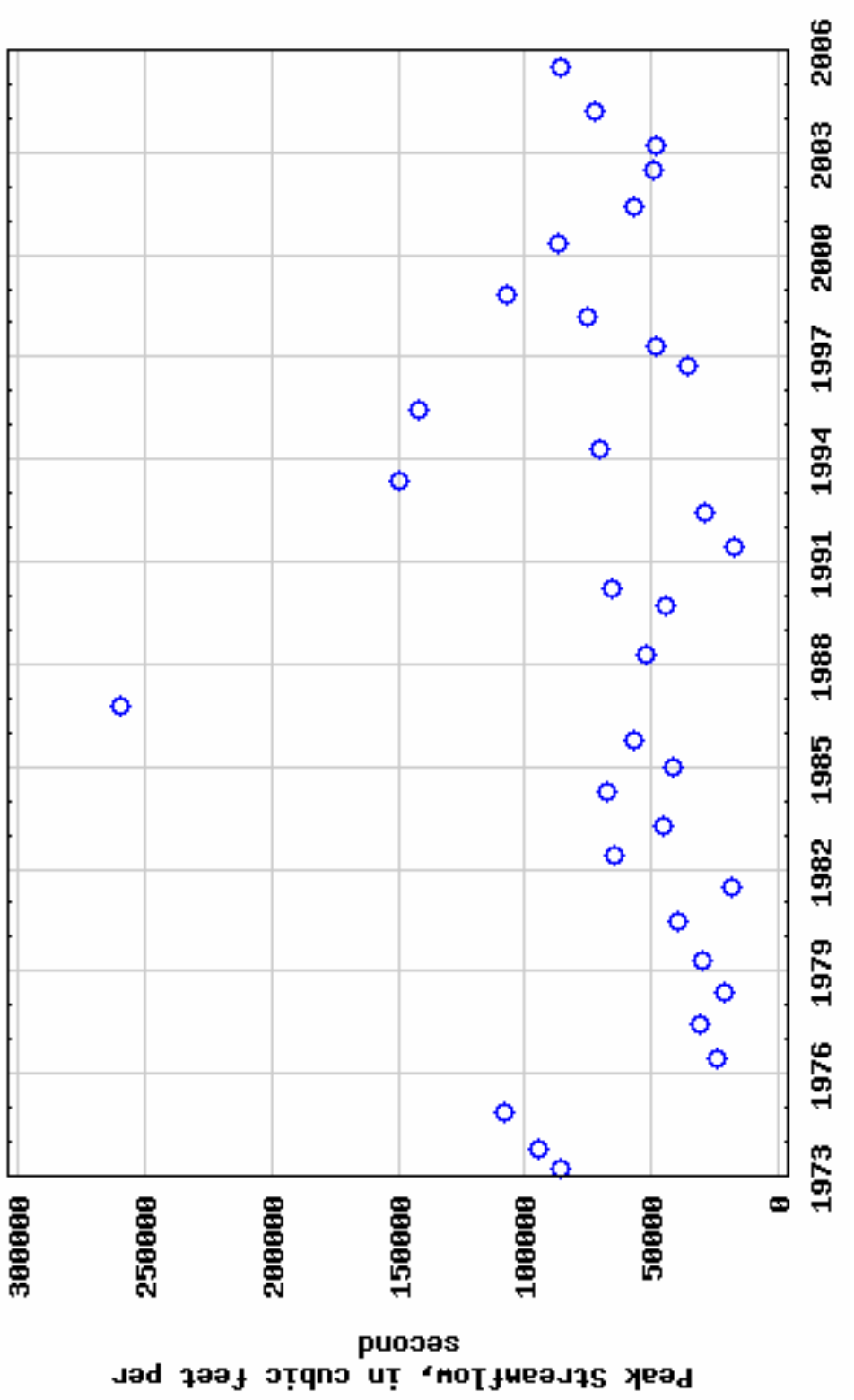


Figure 4. Annual peak streamflow in Arkansas River at Haskell (USGS 07165570), OK

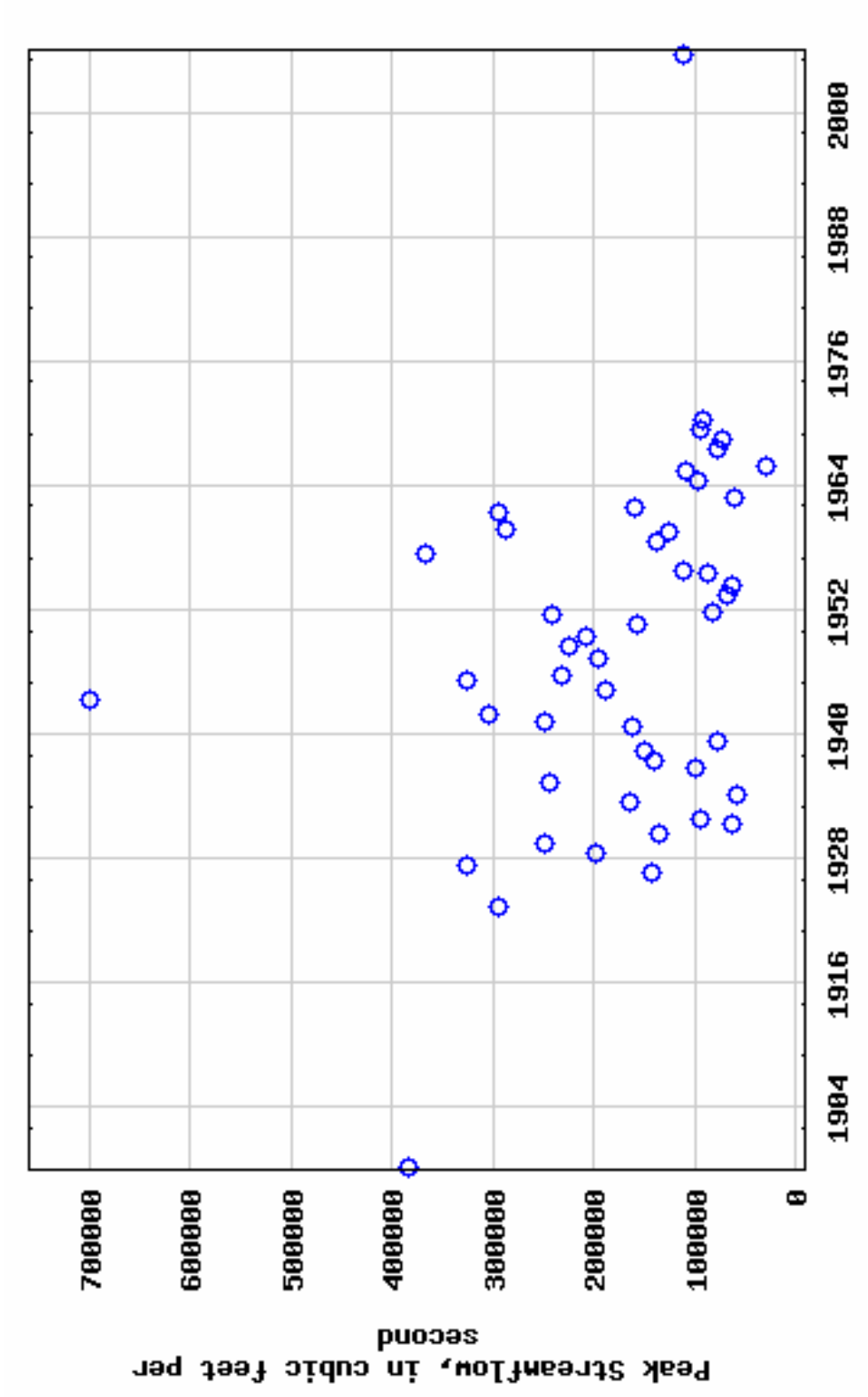


Figure 5. Annual peak streamflow in Arkansas River at Muskogee (USGS 07194500), OK

Gilvear (1999) studied number of areas of fluvial geomorphology directly relevant and beneficial to river engineering:

1) The river channel as a three dimensional form with longitudinal, transverse, and vertical dimensions (x, y, z-directions) involving changes in morphology and amounts of water and sediment.
2) The fluvial process in response to water and sediment coming from the upstream watersheds.
3) The geomorphic stability of a river system altered by activities such as river training, removing riparian vegetation, land use, and climatic change etc.

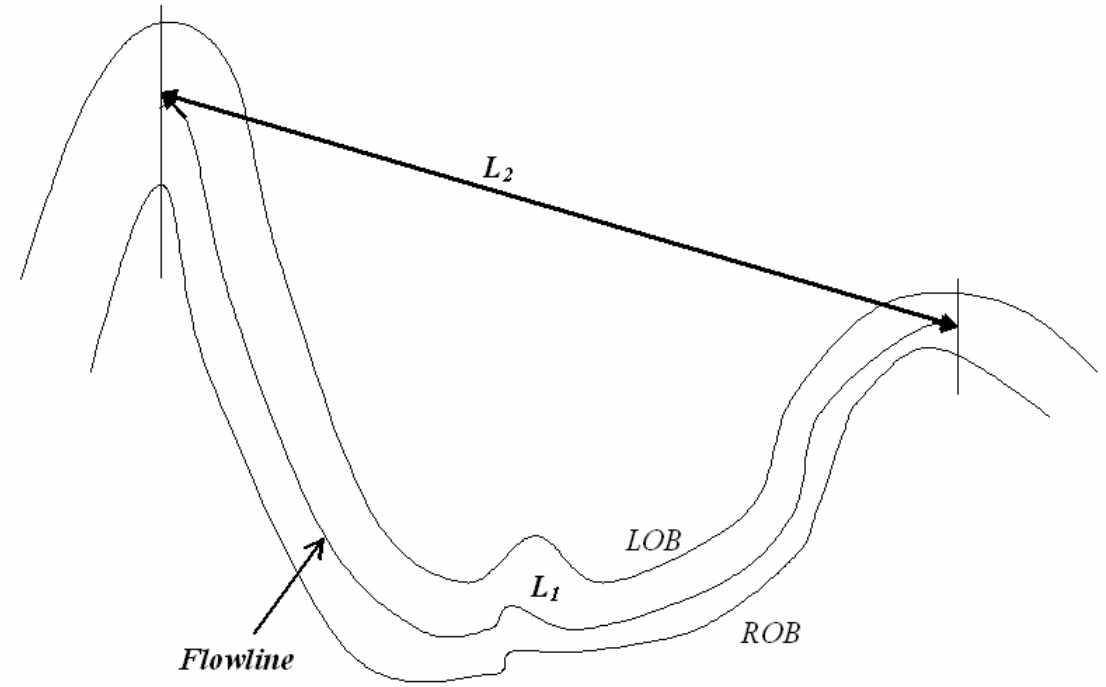
The study reach is divided into 2: Reach 1, from Kaw Lake to Keystone Lake Dam, and Reach 2, from Keystone Lake dam to Webbers Falls reservoir. The object was to study the downstream effects of each dam in river degradation. Data collected at each site included channel gradient, cross-sectional geometry, and bed material composition. Channel gradient from one river station to another was calculated arithmetically and mean taken for each study reach. River meandering between two successive river stations was determined by calculating sinuosity as shown in Figure 6 using Geographic Information System (GIS), to examine the downstream effects of dams in meandering channels. Sinuosity is defined as a ratio of total length between two river stations along the flowline to shortest length of the channel.

The Arkansas River in Oklahoma is highly meandering upstream of Keystone Lake compared to downstream and slope is also higher above

Keystone Lake (Table 2). River-bed geotechnical information for some of the stations was also abstracted from construction detail drawings of each bridge crossing provided by Oklahoma Department of Transportation (ODOT). Longitudinal and vertical changes of the channel-bed were also studied and will be discussed separately in another chapter.

Table 2. Sinuosity and slope study on Arkansas River

Study of reach				Study of River Stations		
Reach	Location	Reach slope	Reach Sinuosity	River Stations	Slope	Sinuosity
1	Kaw Lake to Keystone Dam	2.2	2.3	RS 1 to RS 2	2.527	0.253
				RS 2 to RS 3	1.981	0.533
				RS 3 to RS 4	2.470	0.739
2	Keystone Dam to Webbers Falls reservoir (I-40 crossing)	1.69	1.55	RS 4 to RS 5	22.885	7.692
				RS 5 to RS 6	1.334	0.896
				RS 6 to RS 7	4.612	0.801
				RS 7 to RS 8	0.000	9.091
				RS 8 to RS 9	1.507	0.876
				RS 9 to RS 10	1.415	0.634
				RS 10 to RS 11	5.913	1.471
				RS 11 to RS 12	1.692	0.740
				RS 12 to RS 13	-140.526	5.263
				RS 13 to RS 14	3.262	0.722
				RS 14 to RS 15	0.680	0.581
				RS 15 to RS 16	1.278	0.688



$$Sinuosity = \frac{Flowline \quad Length(L_1)}{Shortest \quad Length(L_2)}$$

Figure 6. Schematic diagram of sinuosity of natural channels

IV. ANALYSIS OF CROSS-SECTIONAL GEOMETRY

Field data measured over 50 year period by ODOT was examined in this study. Throughout the study reach, 16 River Stations (RS) were selected: RS 1 to RS 3 in Reach 1, RS 4 to RS 15 in Reach 2, and RS 16 just downstream of Webbers Falls Dam. Ten out of sixteen stations have data on cross-section geometry. These river stations are measured in bridge crossings.

River-bed degradation is evident for about 80.5 miles below Keystone Lake Dam and 6.5 miles below Webbers Falls Dam at the I-40 highway crossing. RS 1 on highway SH 11(Fig. 7), which is located in Kaw Lake, shows that the channel-bed was aggraded about 9 feet from the 1975 to 1987. The Kaw lake dam was constructed in 1975 and the dam, which completely intercepted the sediment, aggraded the river-bed. At the same location, the observed data shows that the degradation had occurred in the channel-bed in 1987 and reached about 5 feet of degradation by 2002. This corresponds to flooding in Oklahoma in 1986. The 11 inches of precipitation in this region would have allowed the dam to flow large amounts of water to the downstream of the reservoir. RS 2 (Fig.8) shows that the channel-bed below Kaw Lake Dam is not stable. Instead of channel-bed degradation, the channel-bed has shifted from one bank to another.

Another study point is 64 miles downstream Kaw Lake Dam. Geotechnical information on the channel-bed at RS 2 and any tributaries upstream was examined. The channel-bed was characterized by hard stone below 3 feet of sand deposits (Fig. 8). The figure shows that the main channel has been shifted

towards the right bank so as to act against the non-equilibrium flow condition. A large tributary, Salt Fork, joins the Arkansas River about 45 miles upstream of the study point. Hence, no conclusions can be drawn about the downstream effects of Kaw Lake Dam on river degradation with only one station below 64 miles.

Williams and Wolman (1984) studied the downstream effects of 21 dams constructed in alluvial rivers in the United States. Generally, the magnitude of river-bed changes was greatest nearest the dam and diminished with distance downstream. However, the bed-elevation change on RS 4 (Fig. 9) of for study Reach 2 does not show this. The degradation rates of RS 4, RS 5 and RS 6 are lower than its downstream RS 7, RS 8, and RS 9 (Table 3). Cross-section of RS 4 (Fig. 9) at pre-dam closure was not available, though two cross-sections after the dam closure show channel-bed degradation of about 1.5 feet on the hard rock river bed from 1976 to 1992. This might be the cause of degradation rate being lower than that of downstream points. River-bed degradation at RS 9 (Fig. 10) was found to be 2.75 feet. Approximately 2 feet of degradation in RS 10 (Fig. 11) has occurred over 15 year as the channel has exposed its hard bed materials.

RS 11, 12, 13 and 14(Figs. 12-15) have also experienced considerable channel-bed degradation. The channel-bed on RS 15 is neither aggraded nor degraded. RS 16 (Fig.16), located at I-40, 6.5 miles downstream of Webbers Falls Dam, has experienced the greatest channel-bed degradation, 12.2 feet, in the Arkansas River, Oklahoma.

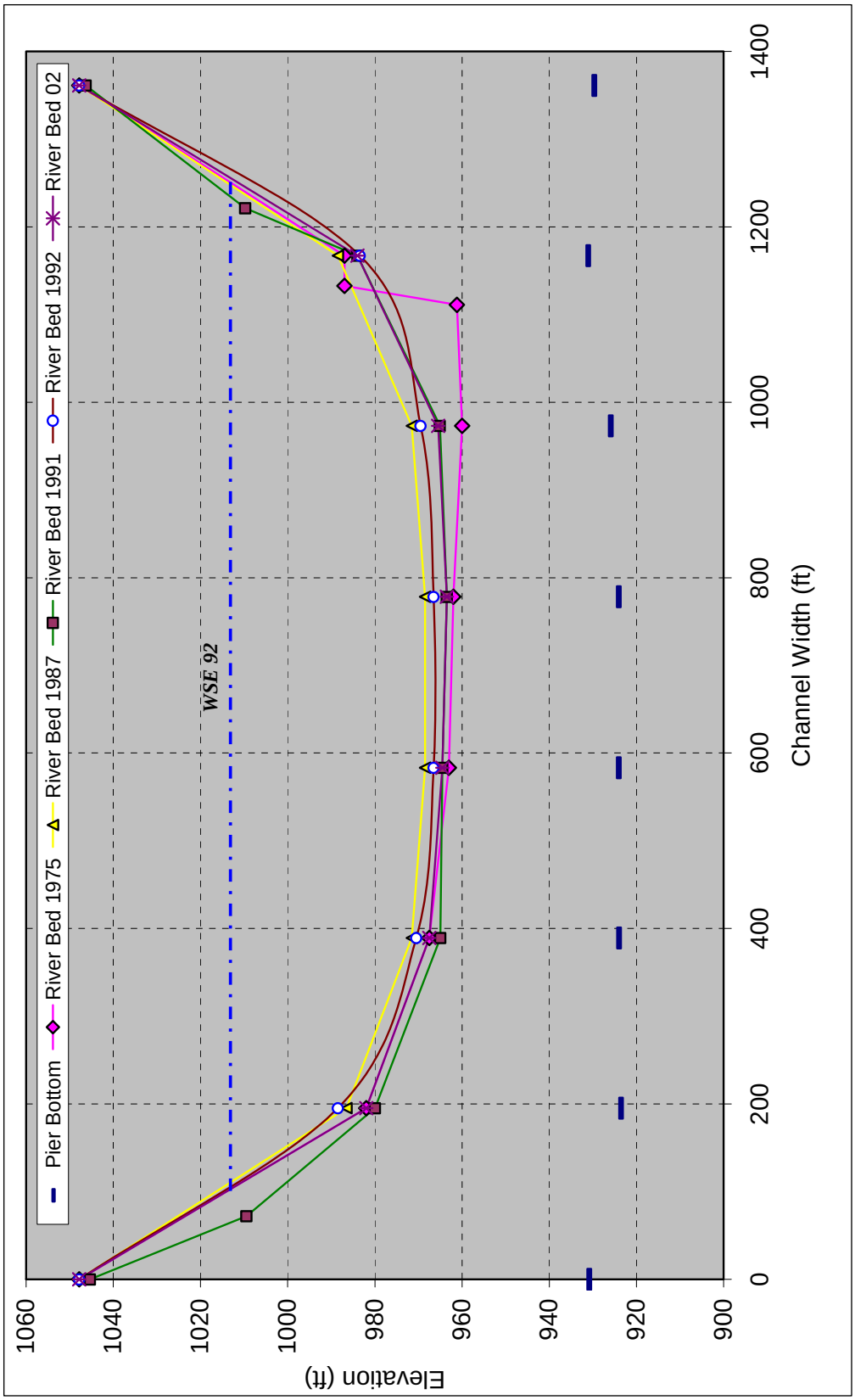


Figure 7. Cross-section at bridge (Bridge No. 19112 and RS 1) on SH 11, Arkansas River, OK

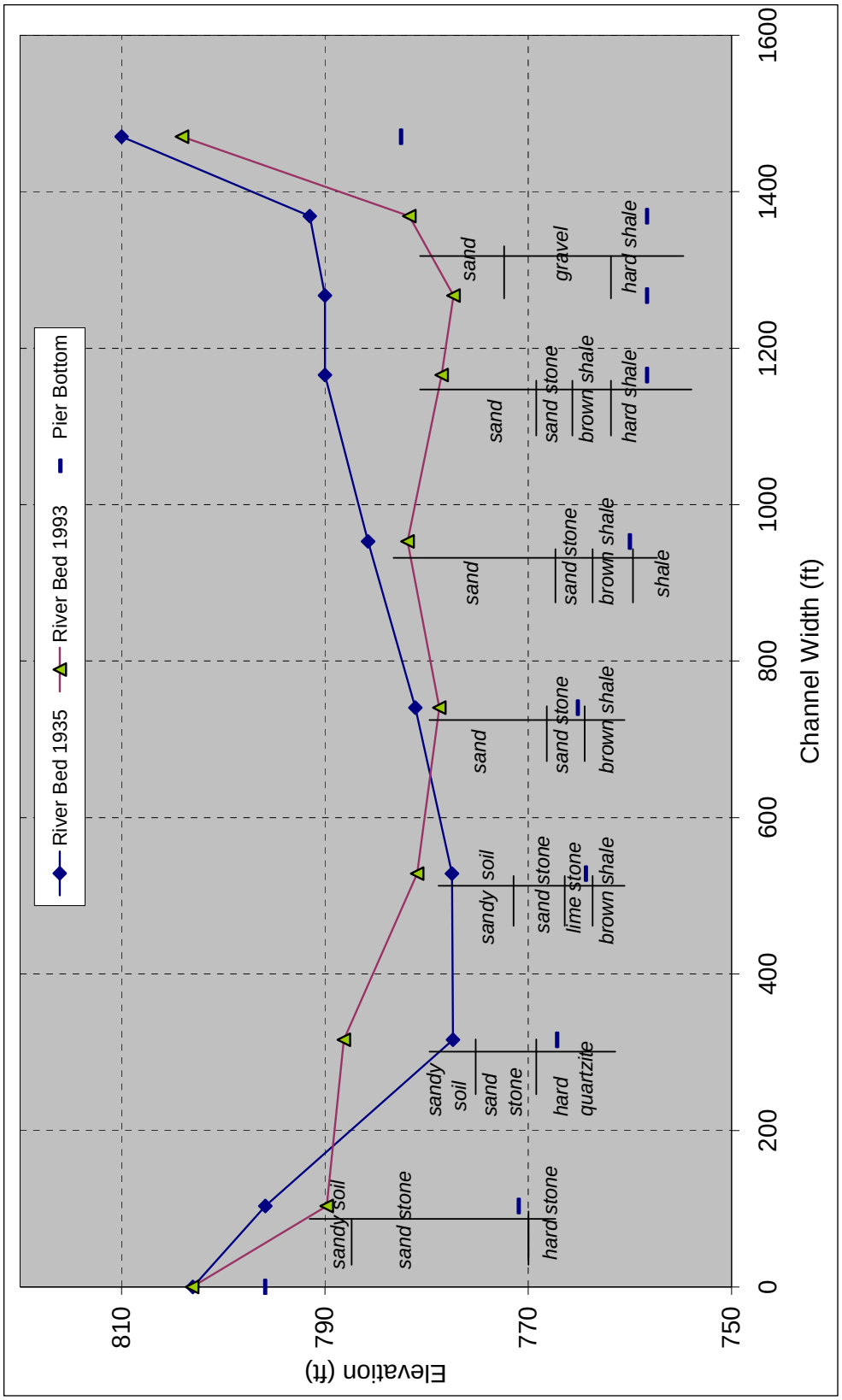


Figure 8. Cross-section at bridge (Bridge No. 04603 and RS 2) on SH 18, Arkansas River, OK

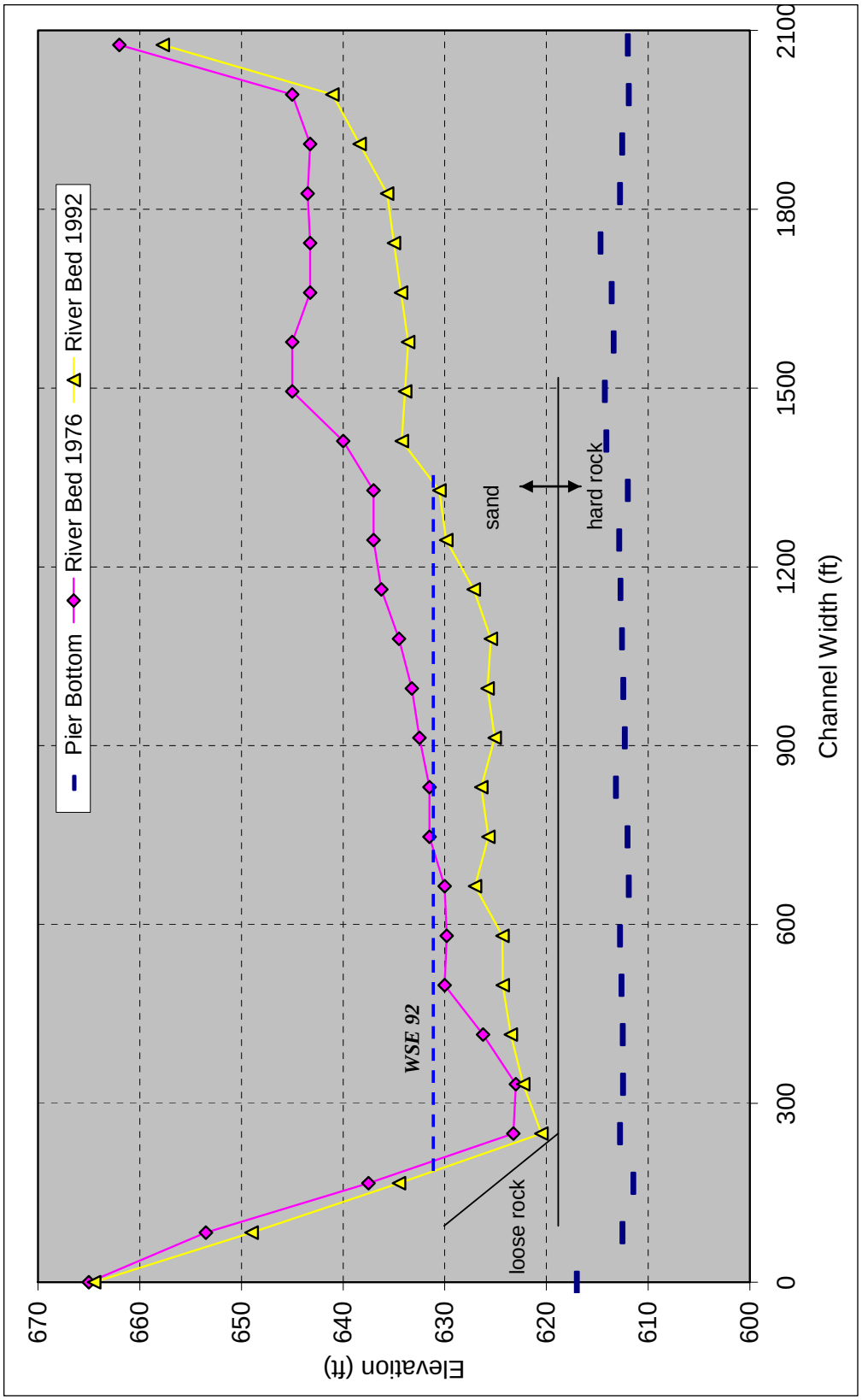


Figure 9. Cross-section at bridge (Bridge No. 19279 and RS 4) on SH 51, Arkansas River, OK

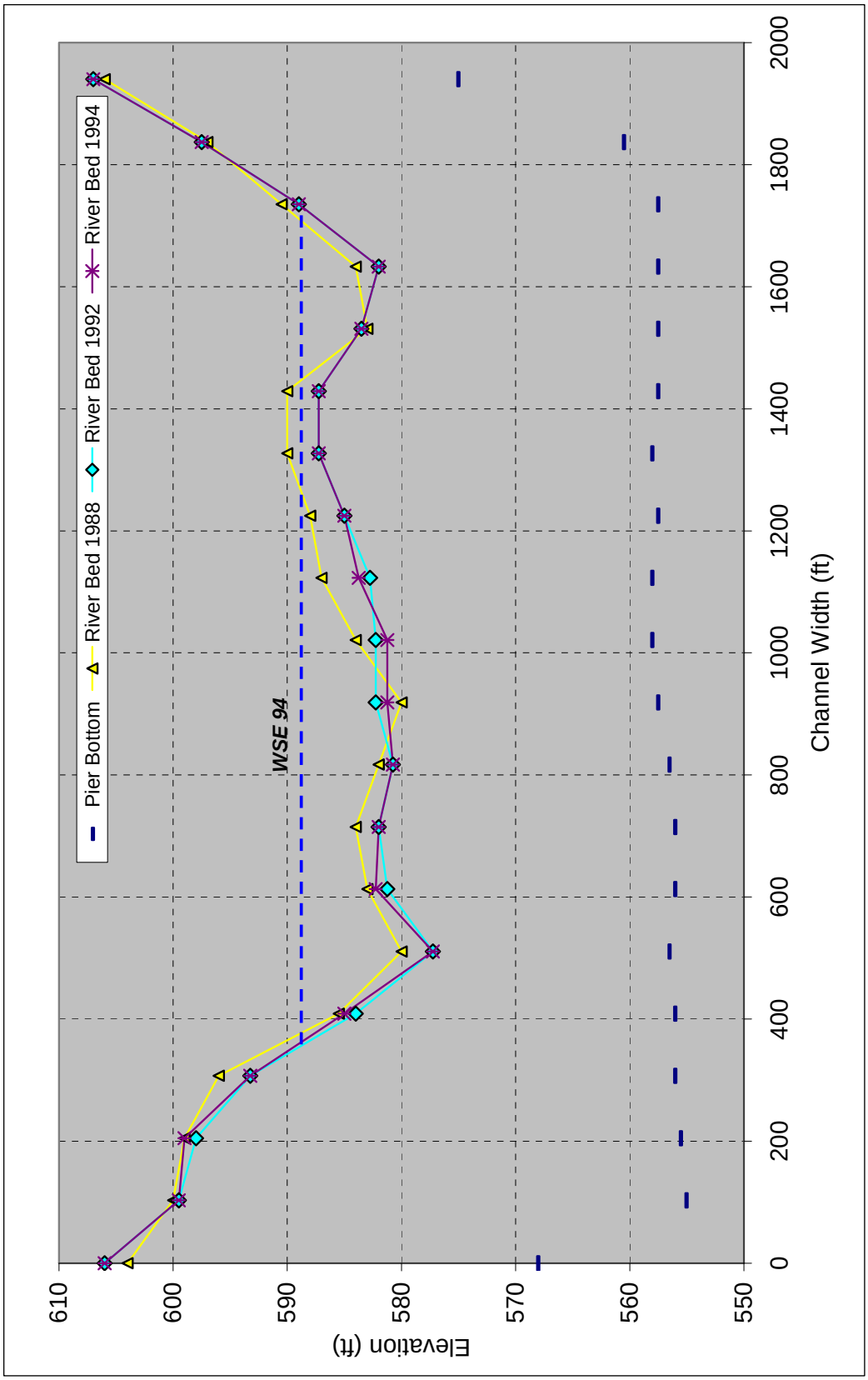


Figure 10. Cross-section at bridge (Bridge No. 22107 and RS 9) on US 64, Arkansas River, OK

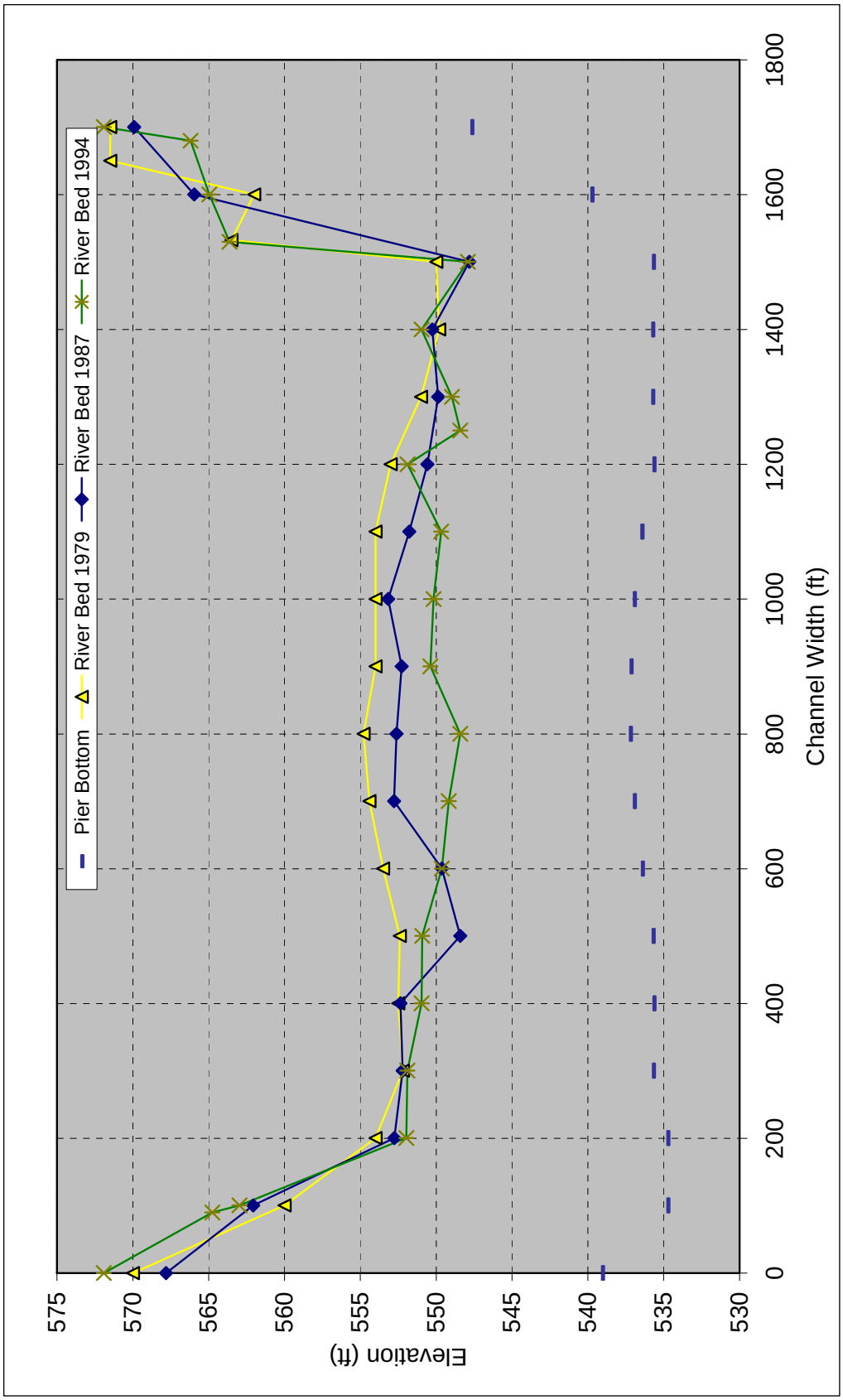


Figure 11. Cross-section at bridge (Bridge No. 19638 an RS 10) on SH 72, Arkansas River, OK

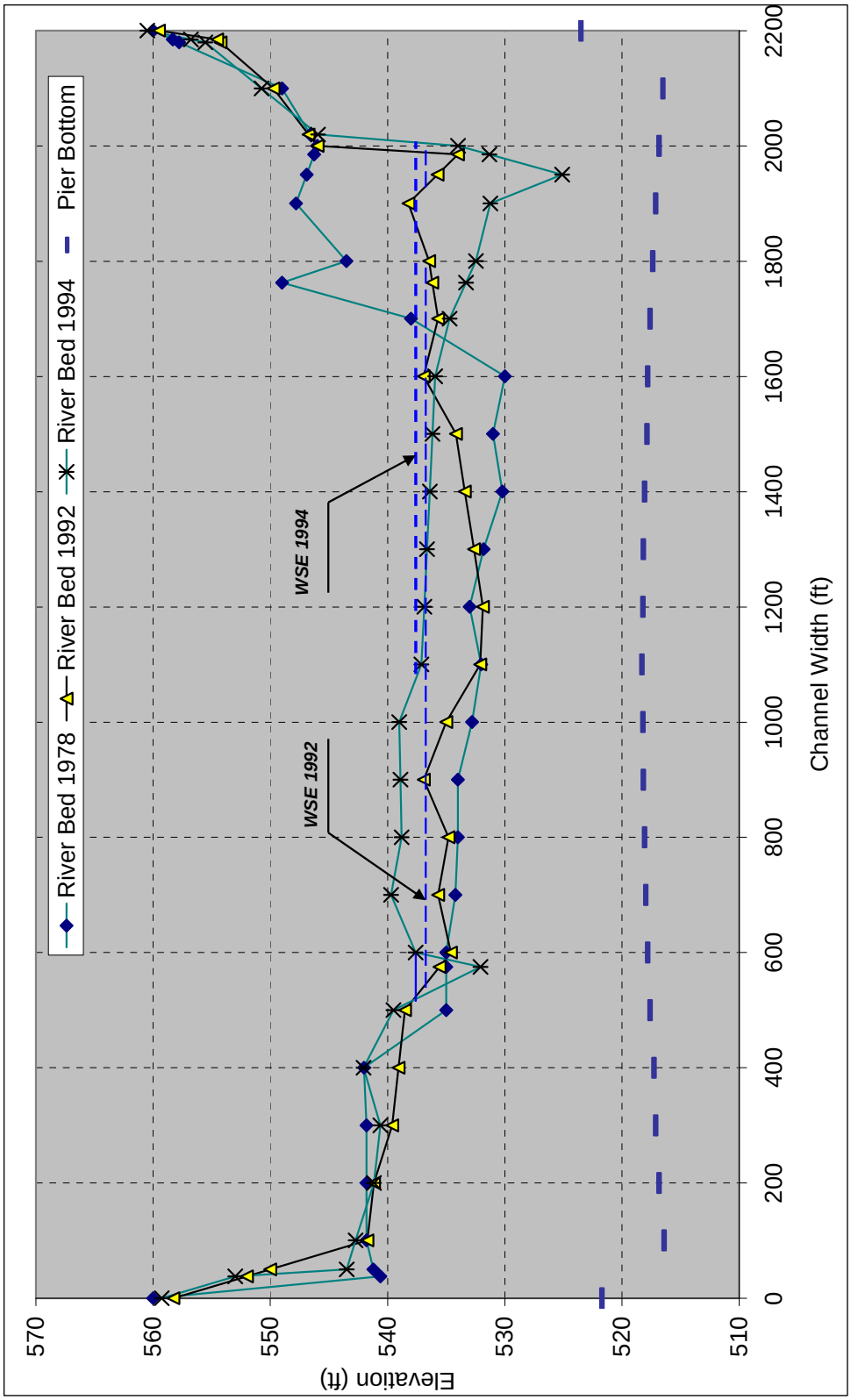


Figure 12. Cross-section at bridge (Bridge No. 19512 and RS 11) on SH 104, Arkansas River, OK

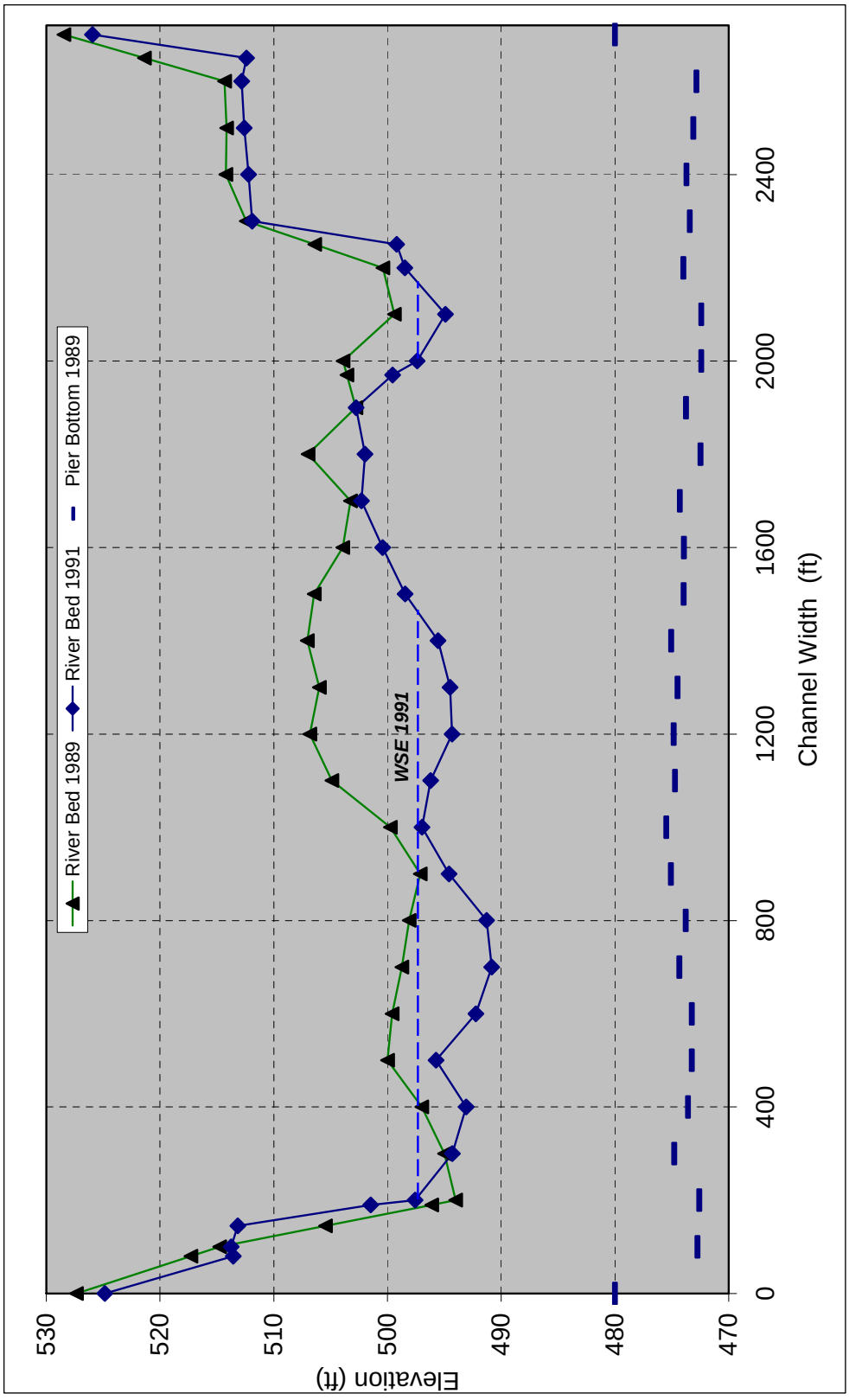


Figure 13. Cross-section at bridge (Bridge No. 22425 and RS 12) on US 69, Arkansas River, OK

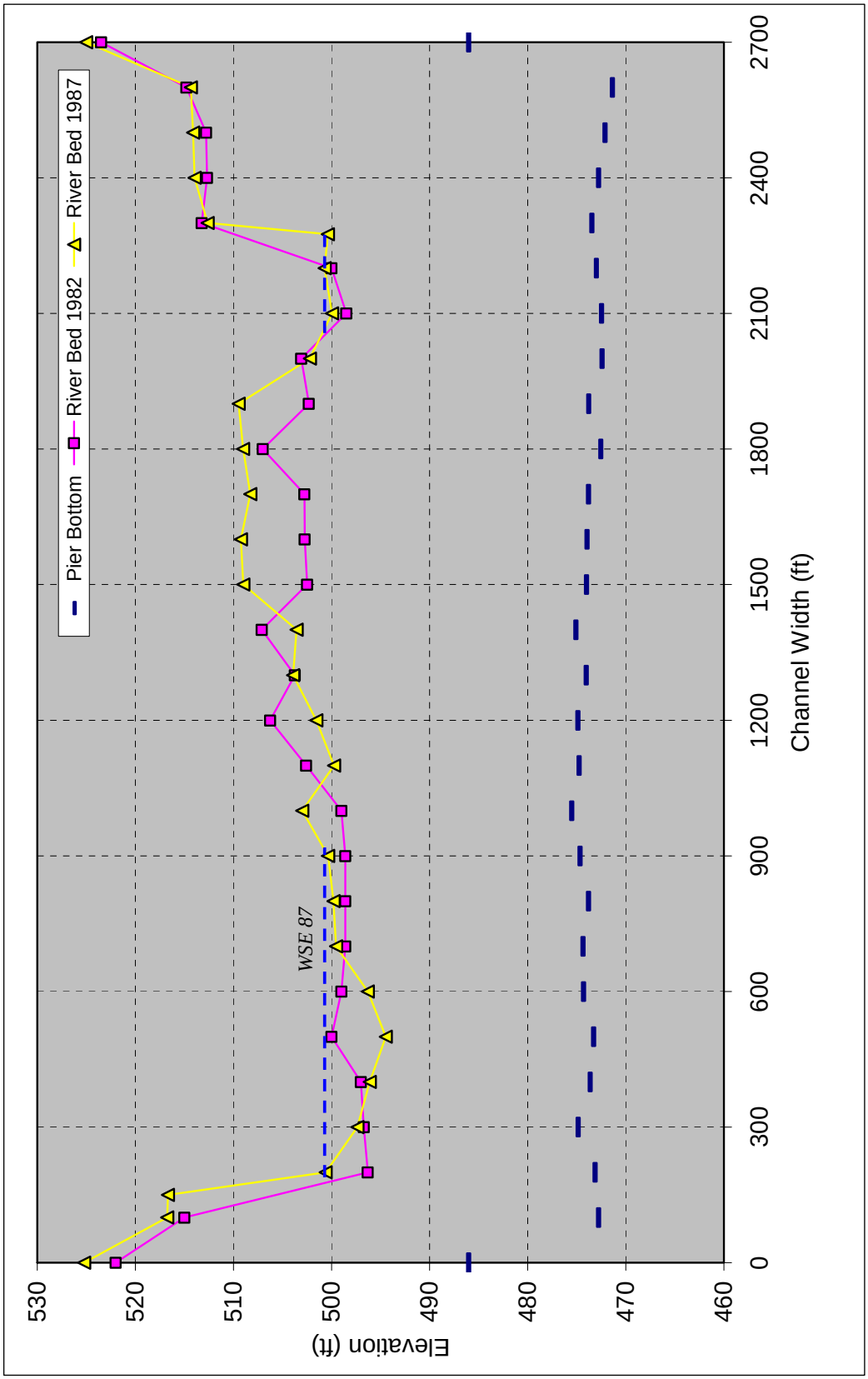


Figure 14. Cross-section at bridge (Bridge No. 20327 and RS 13) on US 69, Arkansas River, OK

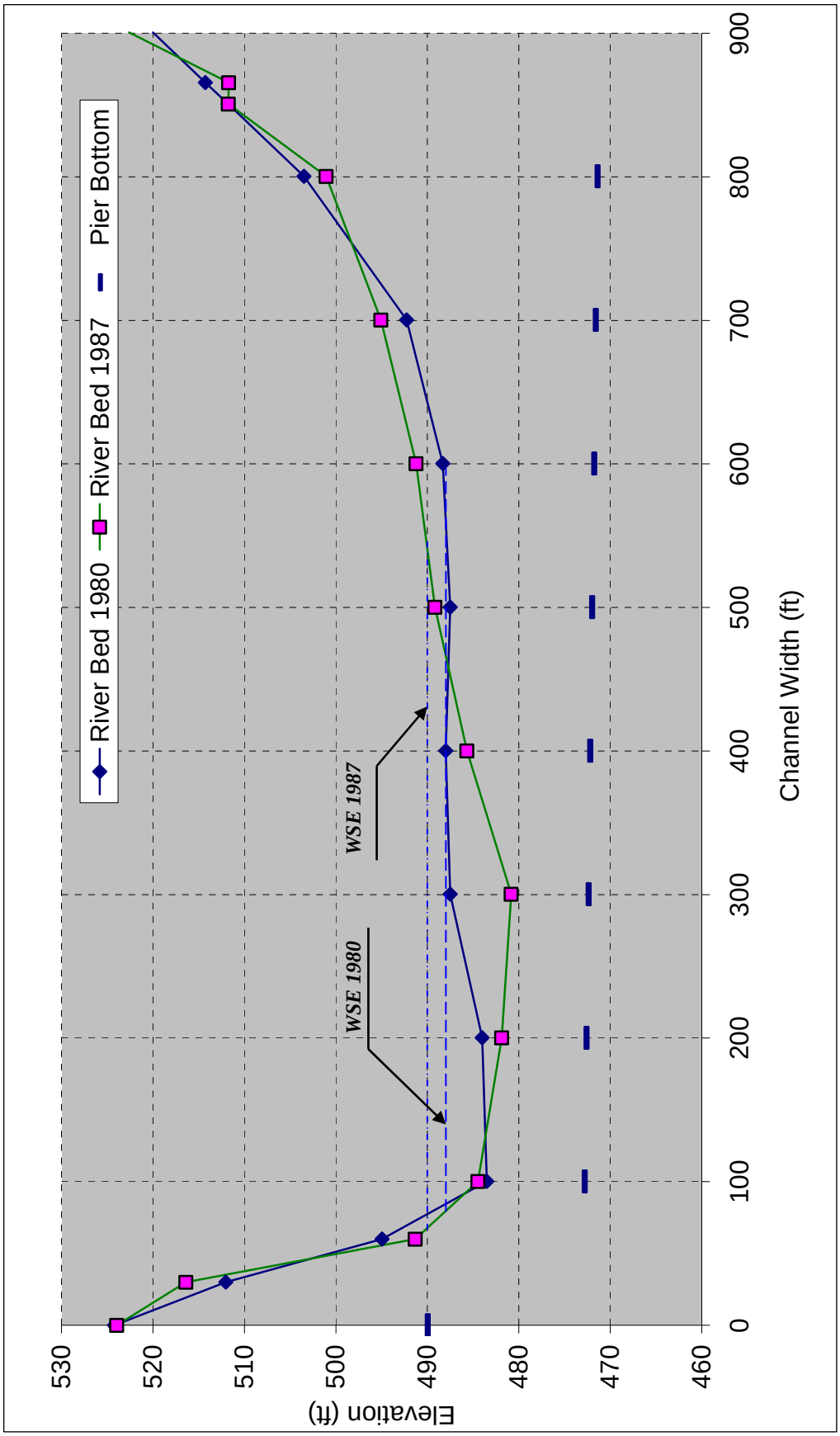


Figure 15. Cross-section at bridge (Bridge No. 19835 and RS 14) on SH 16, Arkansas River, OK

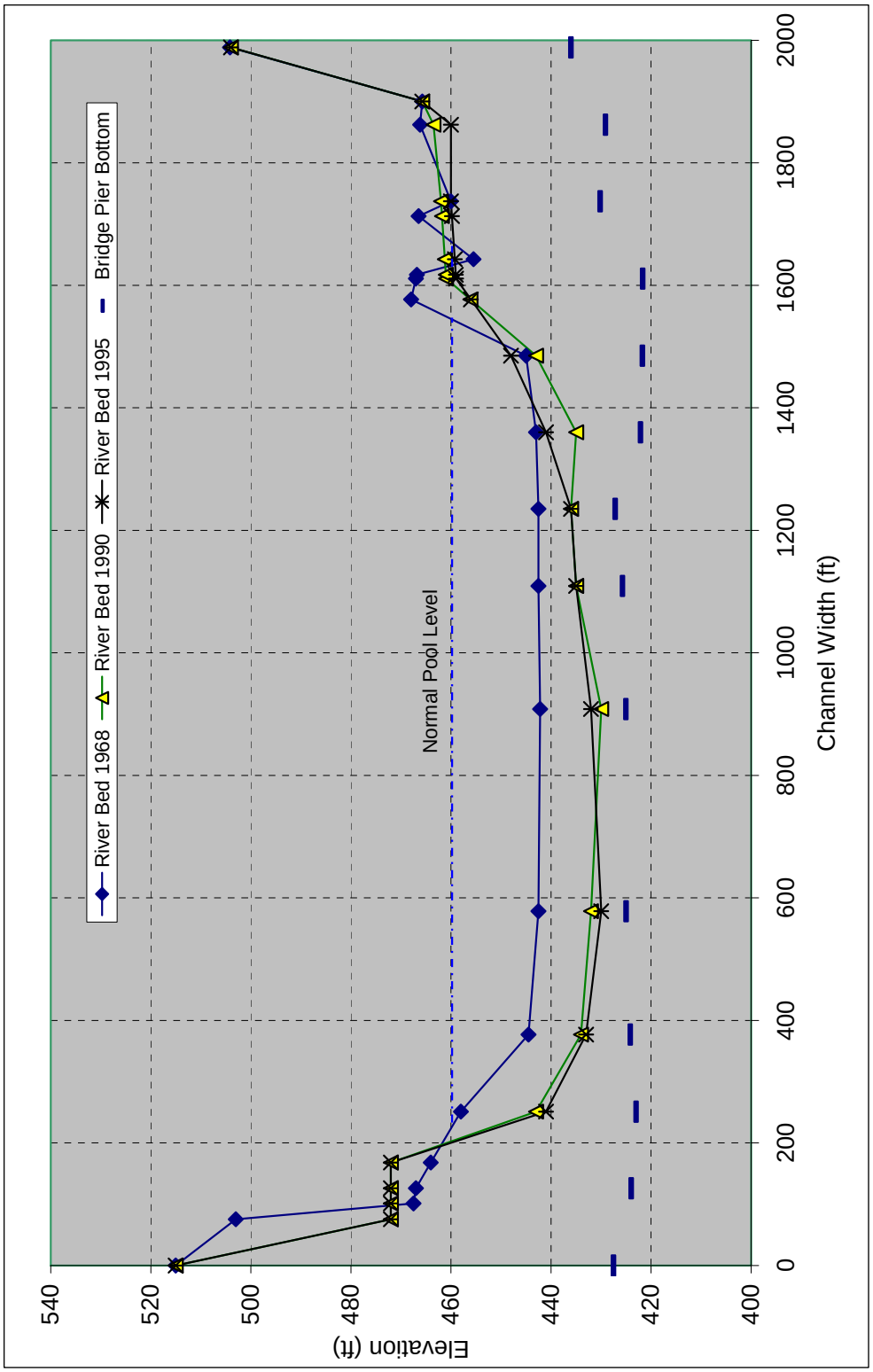


Figure 16. Cross-section at bridge (Bridge No. 17051 and RS 16) on I-40, Arkansas River, OK

V. ANALYSIS OF FLOWLINE PROFILE

The rate of channel-bed elevation change was estimated as the net difference in channel-bed elevation between the start and end dates divided by the time between the two dates (Table 3). The trend line of bed-elevation changes (Fig.17) was plotted for Study Reach of Arkansas River in Oklahoma. The trend shows that degradation is evident below Keystone Lake. The fluvial dynamics of the Arkansas River are not stable downstream of Key Stone Lake until Robert S. Kerr's reservoir. To describe the nature of degradation phenomena along the Arkansas River, the best fit line of channel-bed elevation change rate was plotted along with the river length in miles. Based on the coefficient of correlation, the R^2 value, and the trendlines available in MS Excel, the spline function with third order equation was determined as the best fit line with an R^2 value of 0.45 (Fig. 18).

Flowline at each river station were interpolated for 5-year intervals (Table 4) and longitudinal profiles of flowlines were then plotted in Microsoft Excel (Fig.19). Each twenty five miles of river reach is plotted separately in each sheet for evaluating channel-bed elevation changes (Figs. 20-29).

The study of river-bed elevation change elucidates that the Arkansas River is not stable throughout 80.5 miles below Keystone Lake Dam. River station located at I-40, 7 miles downstream of Webbers Falls Dam, has experienced 12.2 feet of channel-bed degradation, the greatest in the Arkansas River, Oklahoma.

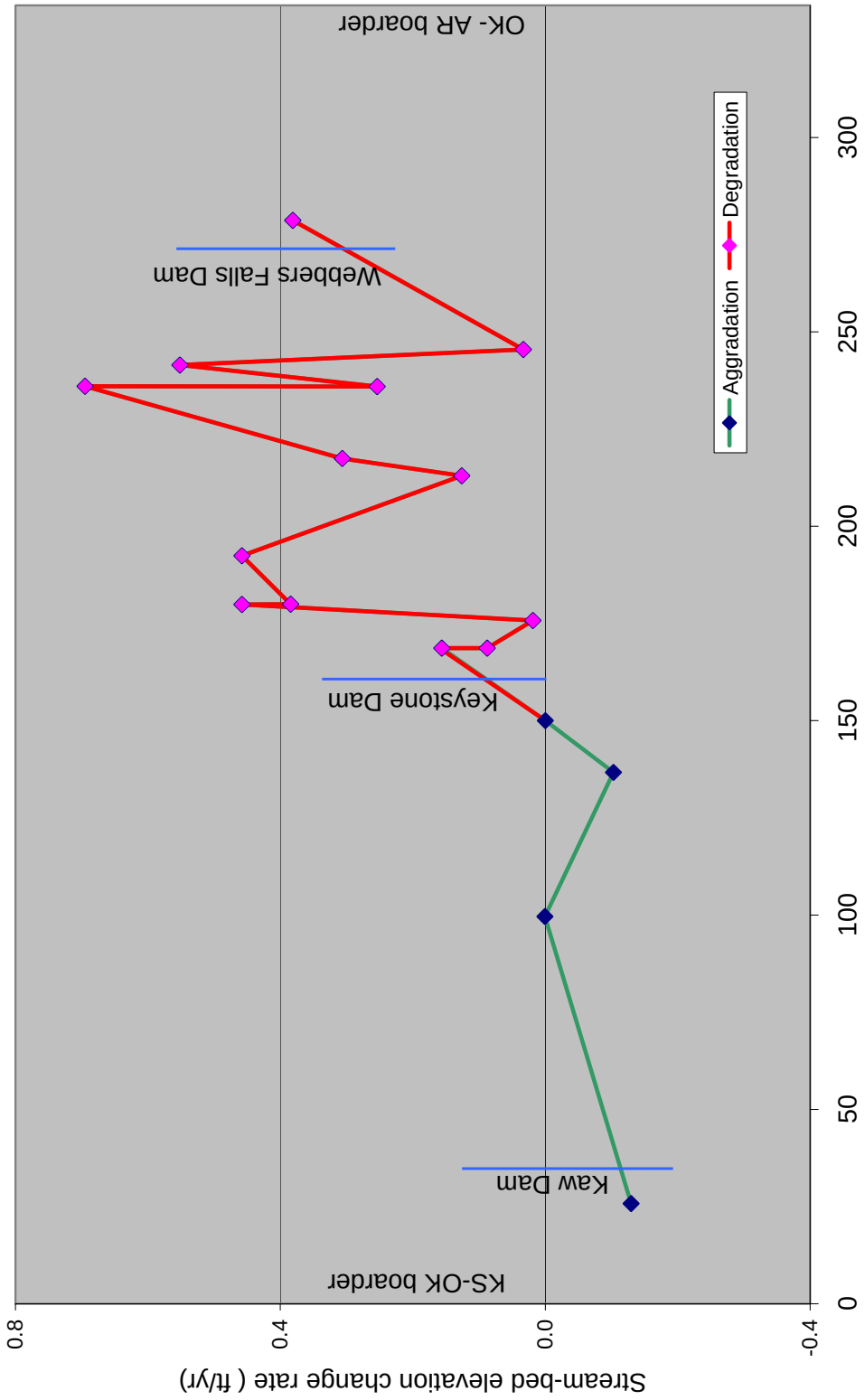


Figure 17. Trend line of stream-bed elevation changes

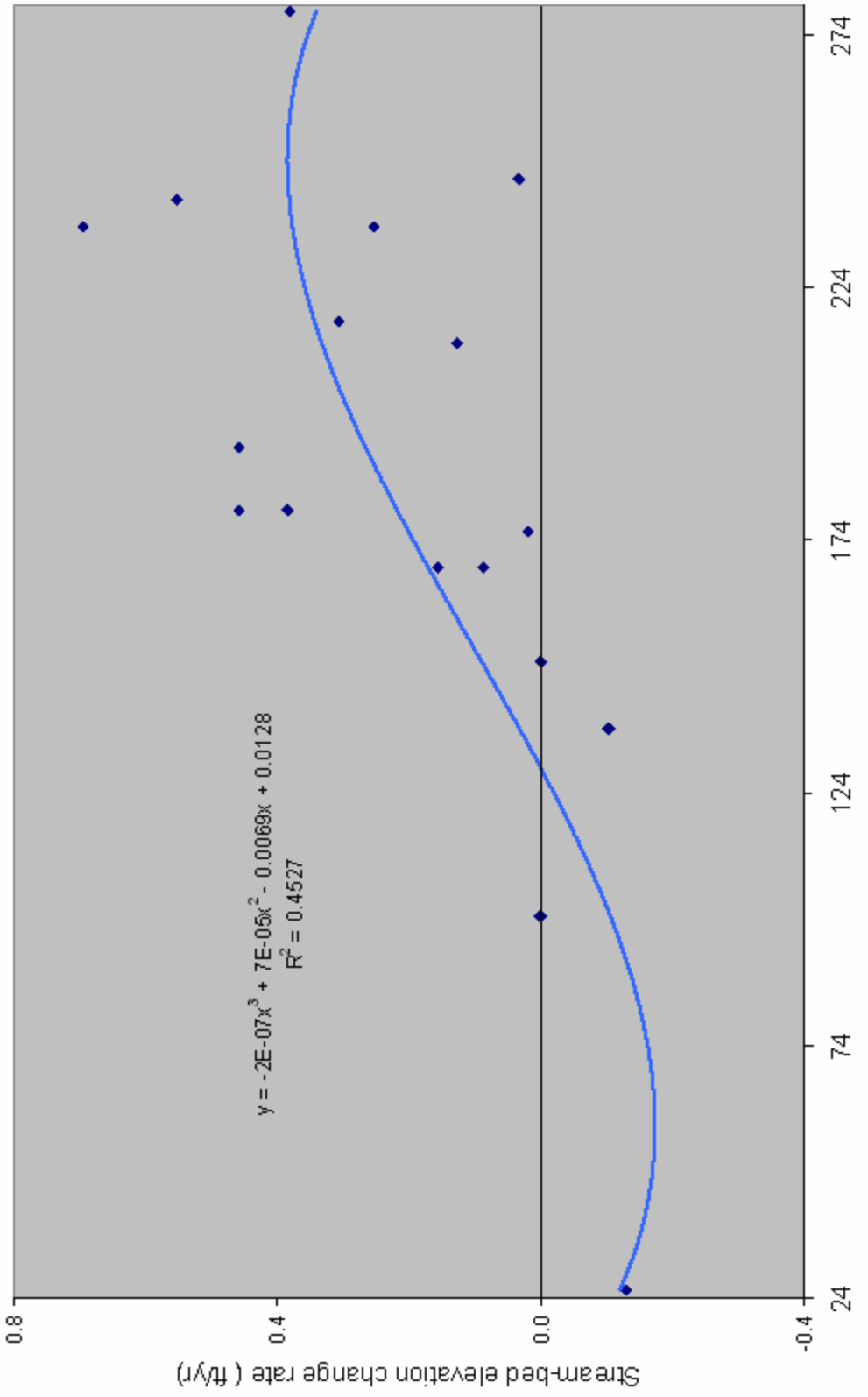


Figure 18. The best fit line of stream-bed elevation change rate (ft/yr) versus river length in miles

Table 3. Summary of channel –bed elevation change, Arkansas River

Bri_key	River stations	Miles	Bridge Installed	Highway	Stratum	Max. Scour **(ft)	Duration (yr)	Scour rate **(ft/yr)
b19112	RS1	25.74	1975	S.H.11	Coarse sand to rock	-3.50	27	-0.13
b04603	RS2	99.60	1935	S.H.18	Sand to hard quartzite	0.03	58	0.00
*b15866	RS3	136.71	1963	S.H 99	Sand to Shale	3.08	30	0.10
b19279	RS4	168.64	1976	S.H.51	Loose rock to rock	2.50	16	0.16
*b19511	RS5	168.65	1978	S.H 51	Loose rock to rock	1.40	16	0.09
*b17052	RS6	175.74	1967	I-244	Sand to hard shale	0.50	27	0.02
*b20580	RS7	179.91	1983	I-44	Fine sand to blue shale	5.50	12	0.46
*b20326	RS8	179.92	1983	I-44	Fine sand to blue shale	5.00	13	0.38
b22107	RS9	192.37	1988	U.S. 64	Sand to grey shale	2.75	6	0.46
b19638	RS10	212.94	1979	S.H. 72	Sand to hard shale	1.89	15	0.13
b19512	RS11	217.41	1978	S.H.104	Sand to hard shale	4.90	16	0.31
b22425	RS12	235.98	1989	U.S. 69	Sand to hard shale	3.17	2	1.59
b20327	RS13	235.96	1982	U.S. 69	Sand to blue shale	1.84	5	0.37
b19835	RS14	241.43	1980	S.H.16	Medium hard shale	2.68	7	0.38
*b17610	RS15	245.48	1969	U.S.62	Medium hard shale	0.50	15	0.03
b17051	RS16	278.71	1968	I-40	Medium hard shale	12.2	28	0.44

* Bridges without cross section data

**Note: (-) Aggradation
: (+) Degradation

Table 4. Flow line interpolated data for 5 years interval, Arkansas River

Location		Year							
Bri_key	River Stations	Miles	1975	1980	1985	1990	1995	2000	2005
b19112	RS1	25.74	960.00	963.54	967.08	964.74	964.00	963.64	963.29
b04603	RS2	99.60	777.38	777.38	777.38	777.37	777.37	777.37	777.36
b15866	RS3	136.71	702.33	702.85	703.36	704.39	703.87		
b19279	RS4	168.64	623.04	622.85	622.78	622.78	625.00	625.45	626.00
b19511	RS5	168.65	625.85	623.19	623.13	624.14	624.71		
b17052	RS6	175.74	615.18	614.98	614.78	614.58	615.25		
b20580	RS7	179.91		603.33	600.28	597.22	596.00	596.00	
b20326	RS8	179.92		602.00	599.50	597.00	596.00	595.00	
b22107	RS9	192.37			582.06	578.63	577.25		
b19638	RS10	212.94	550.80	550.05	551.29	546.95	548.15	549.35	550.55
b19512	RS11	217.41	528.59	530.94	533.28	532.81	521.72		
b22425	RS12	235.98				492.42	490.33	488.58	486.83
b20327	RS13	235.96		498.83	492.50	494.70	493.00	493.00	
b19835	RS14	241.43	483.63	483.50	482.00	482.46	475.22		
b17610	RS15	245.48	472.80	472.63	472.47				
b17051	RS16	278.71	438.32	435.55	432.77	430.00	430.00	430.00	430.00

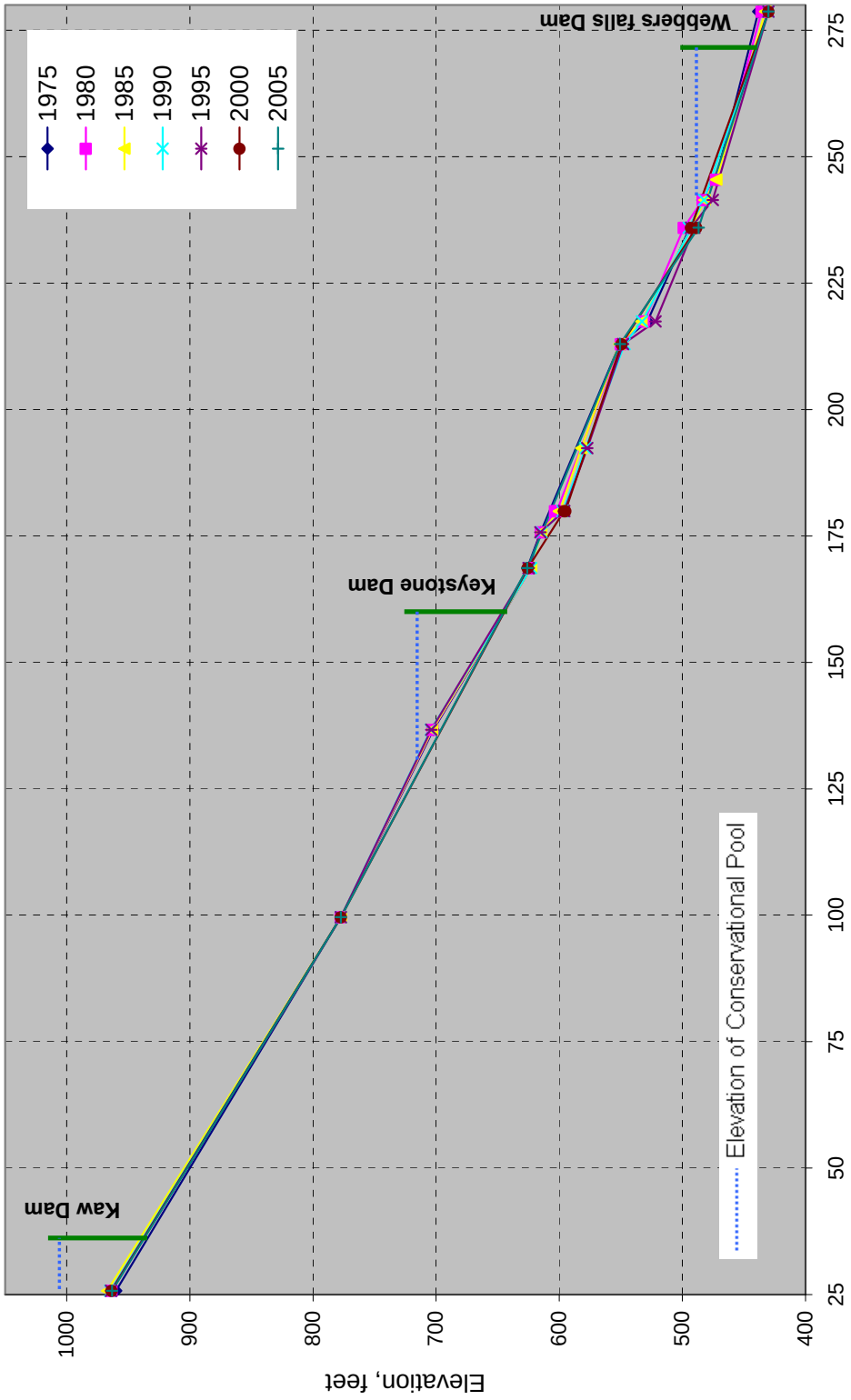


Figure 19. Longitudinal Profile of Arkansas River Bed, Oklahoma

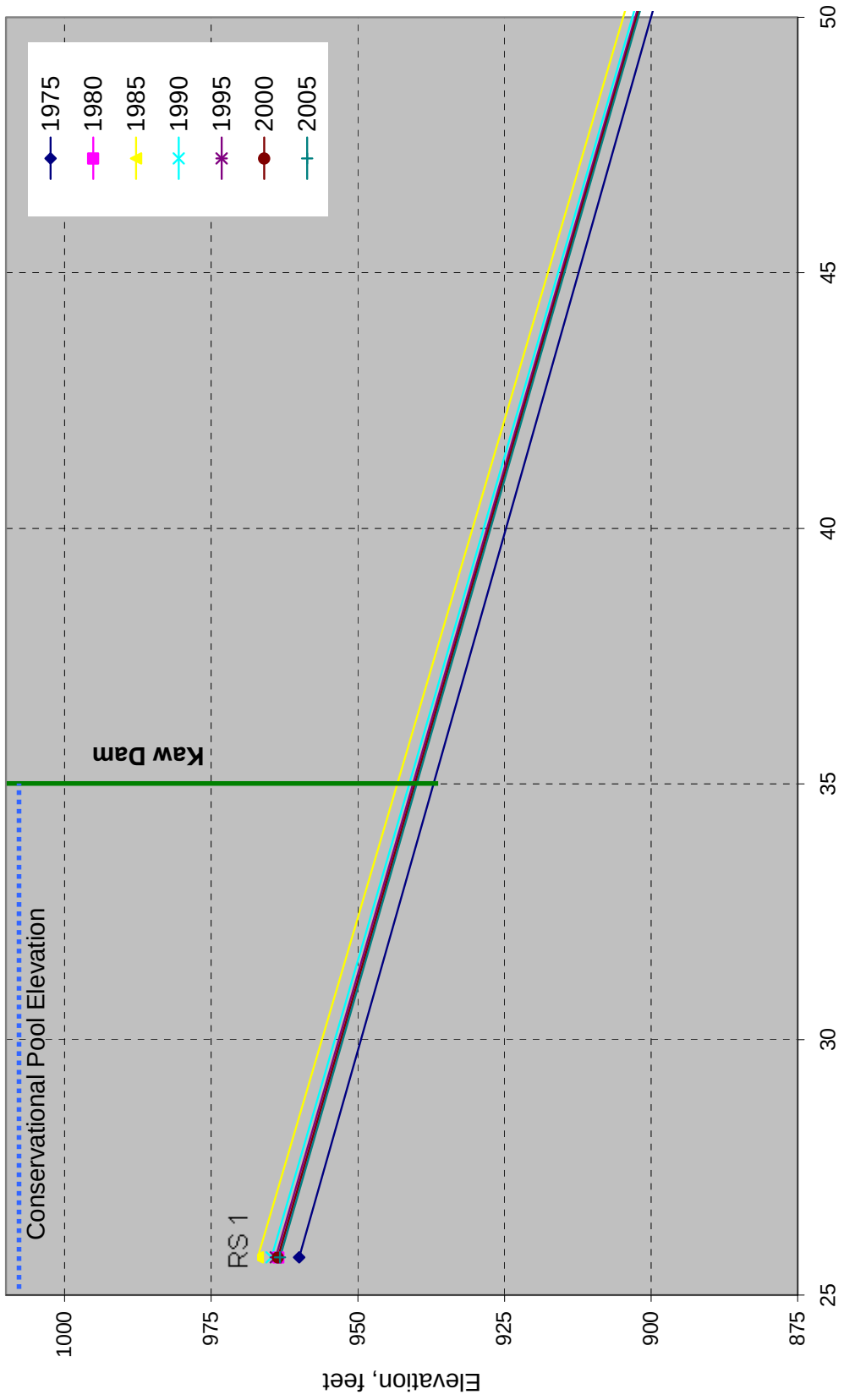


Figure 20. Longitudinal profile of Arkansas River Bed, Oklahoma

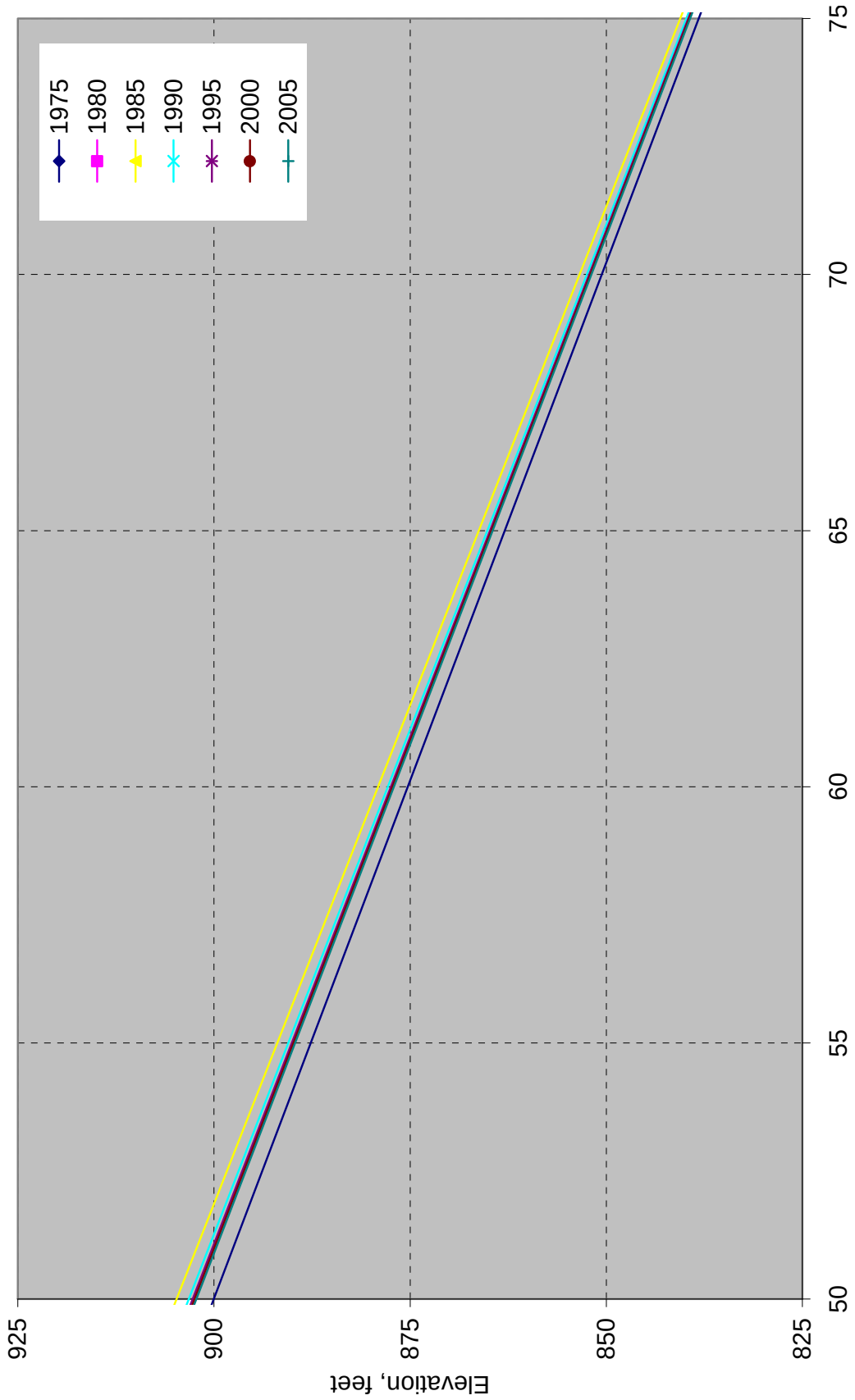


Figure 21. Longitudinal profile of Arkansas River Bed, Oklahoma

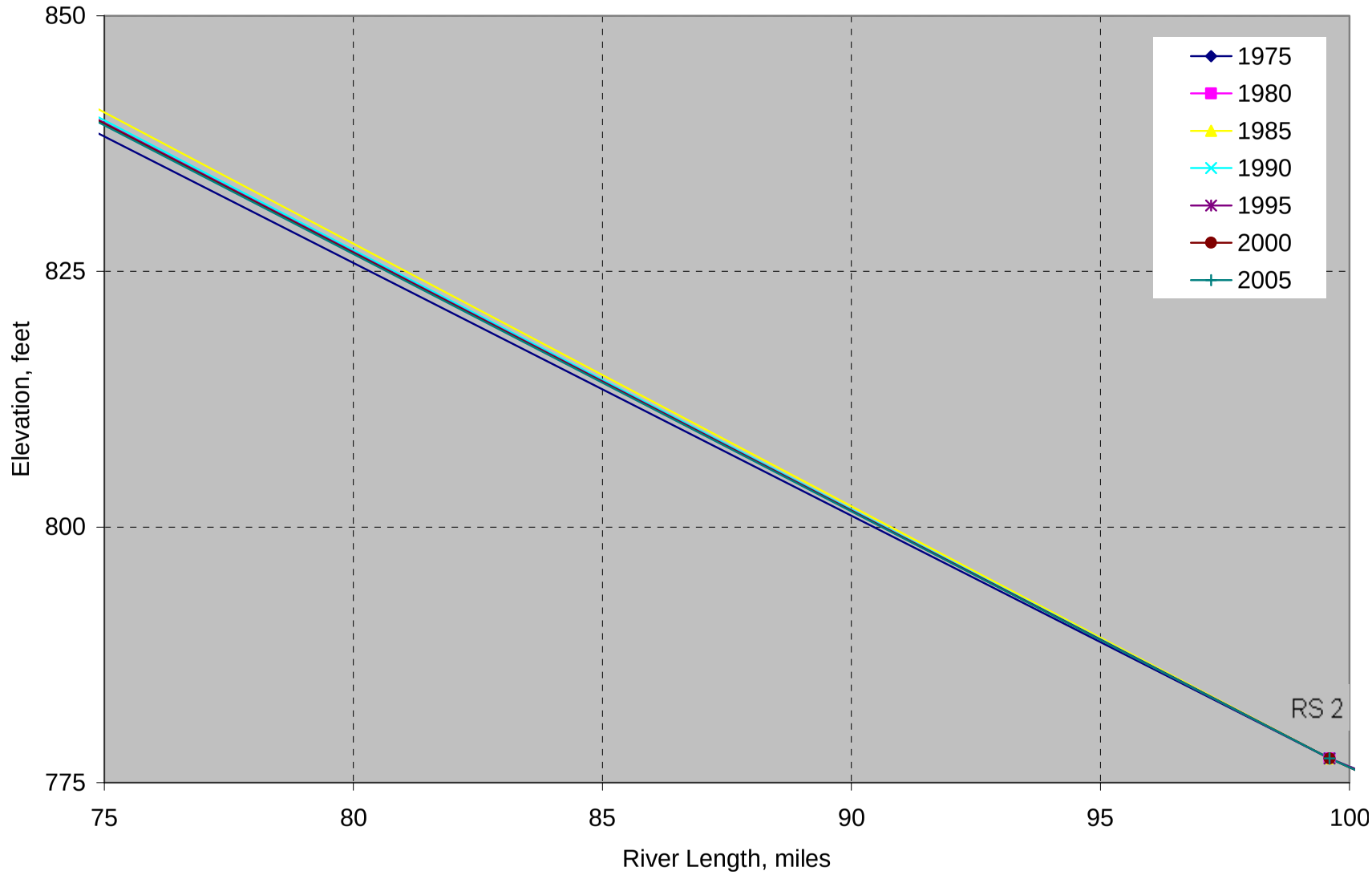


Figure 22. Longitudinal profile of Arkansas River Bed, Oklahoma

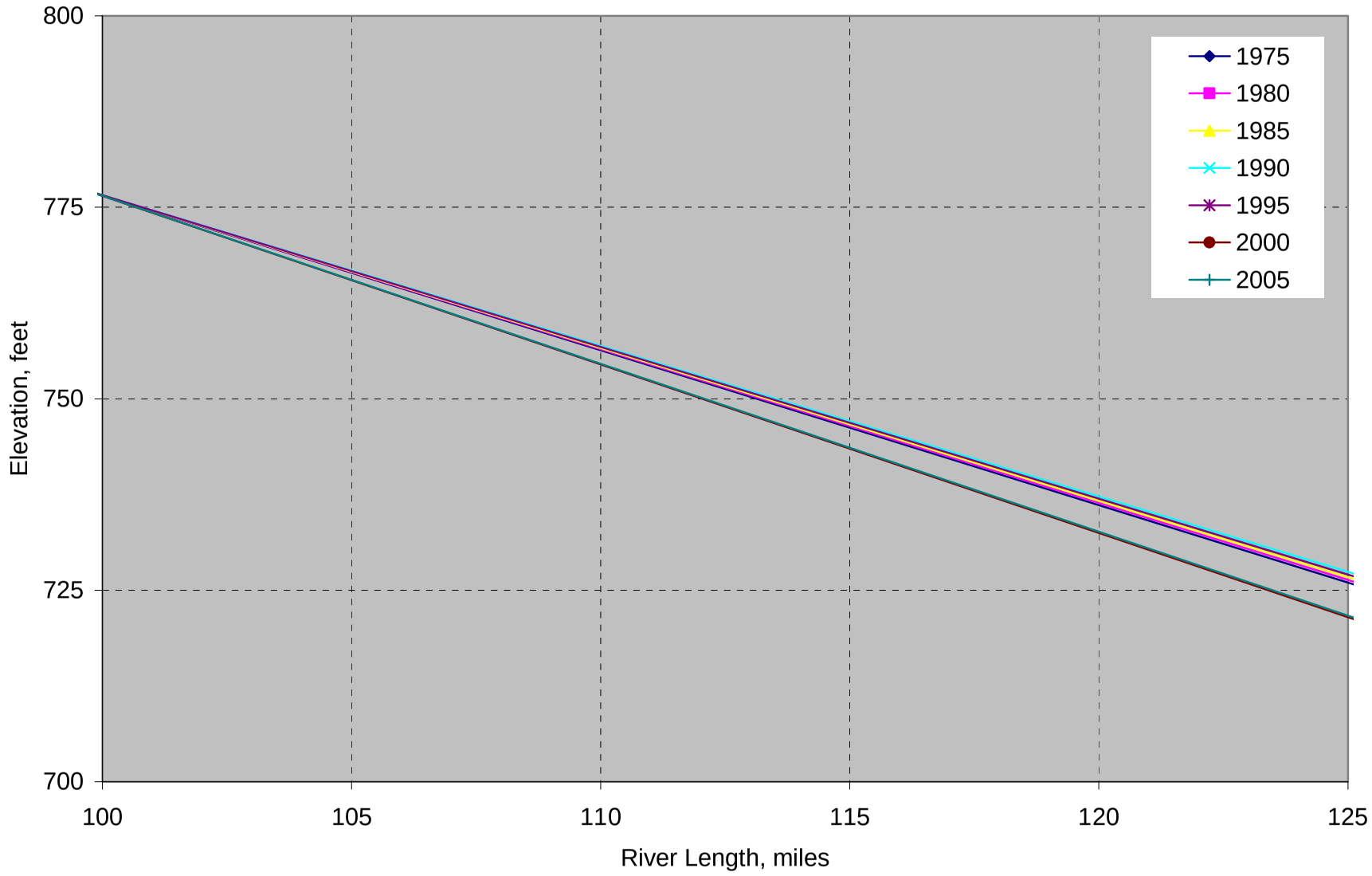


Figure 23. Longitudinal profile of Arkansas River Bed, Oklahoma

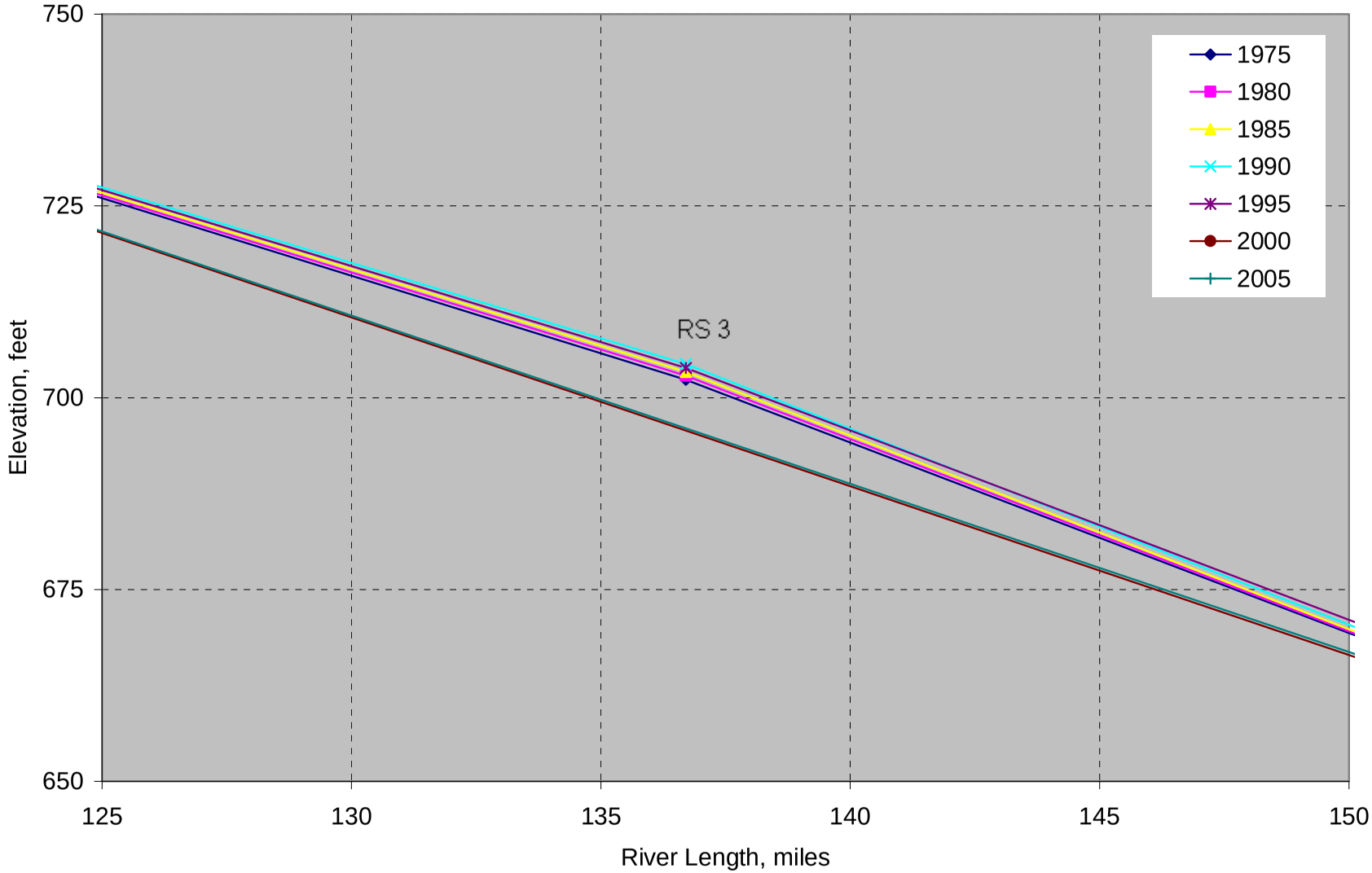


Figure 24. Longitudinal profile of Arkansas River Bed, Oklahoma

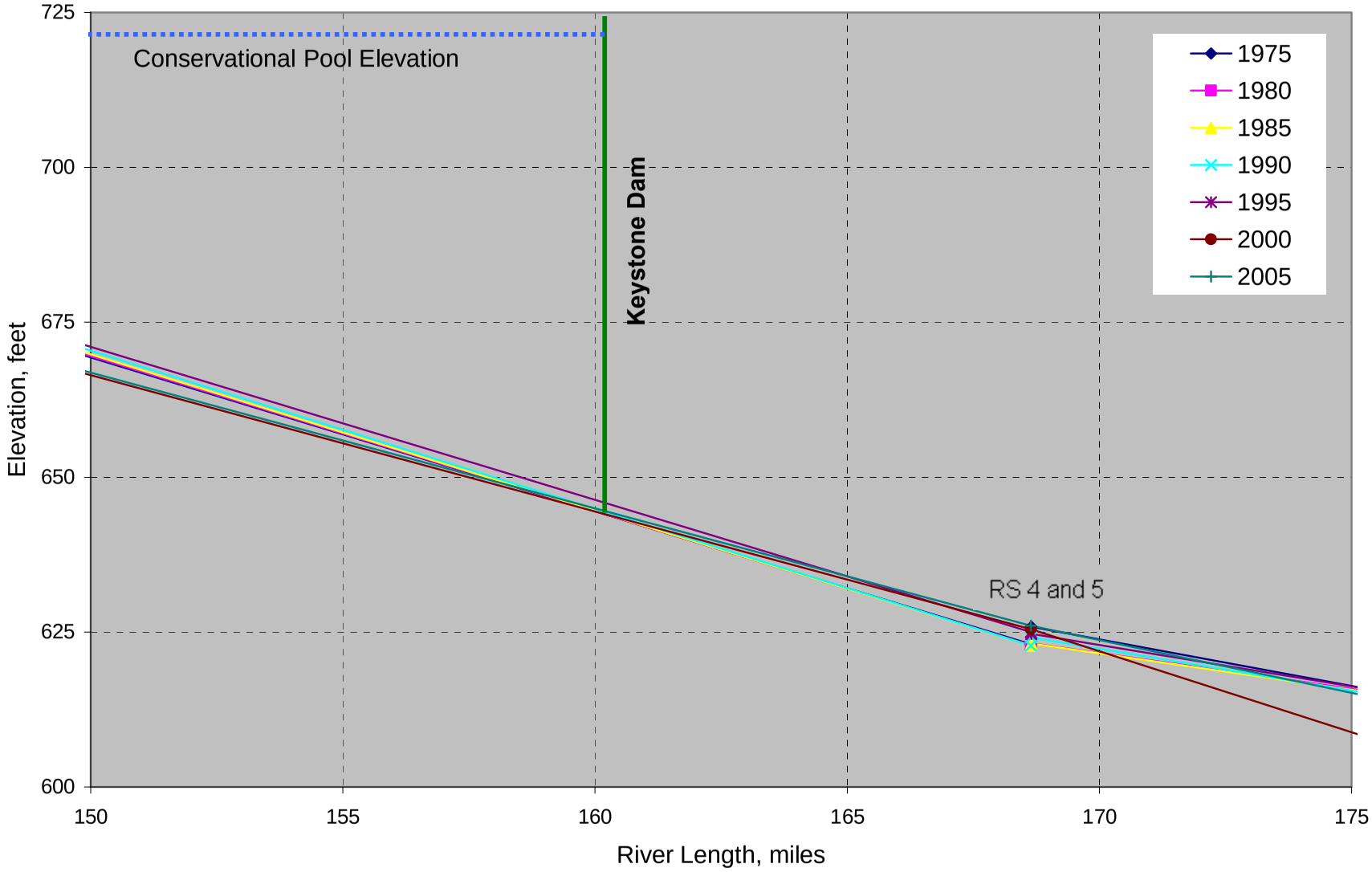


Figure 25. Longitudinal profile of Arkansas River Bed, Oklahoma

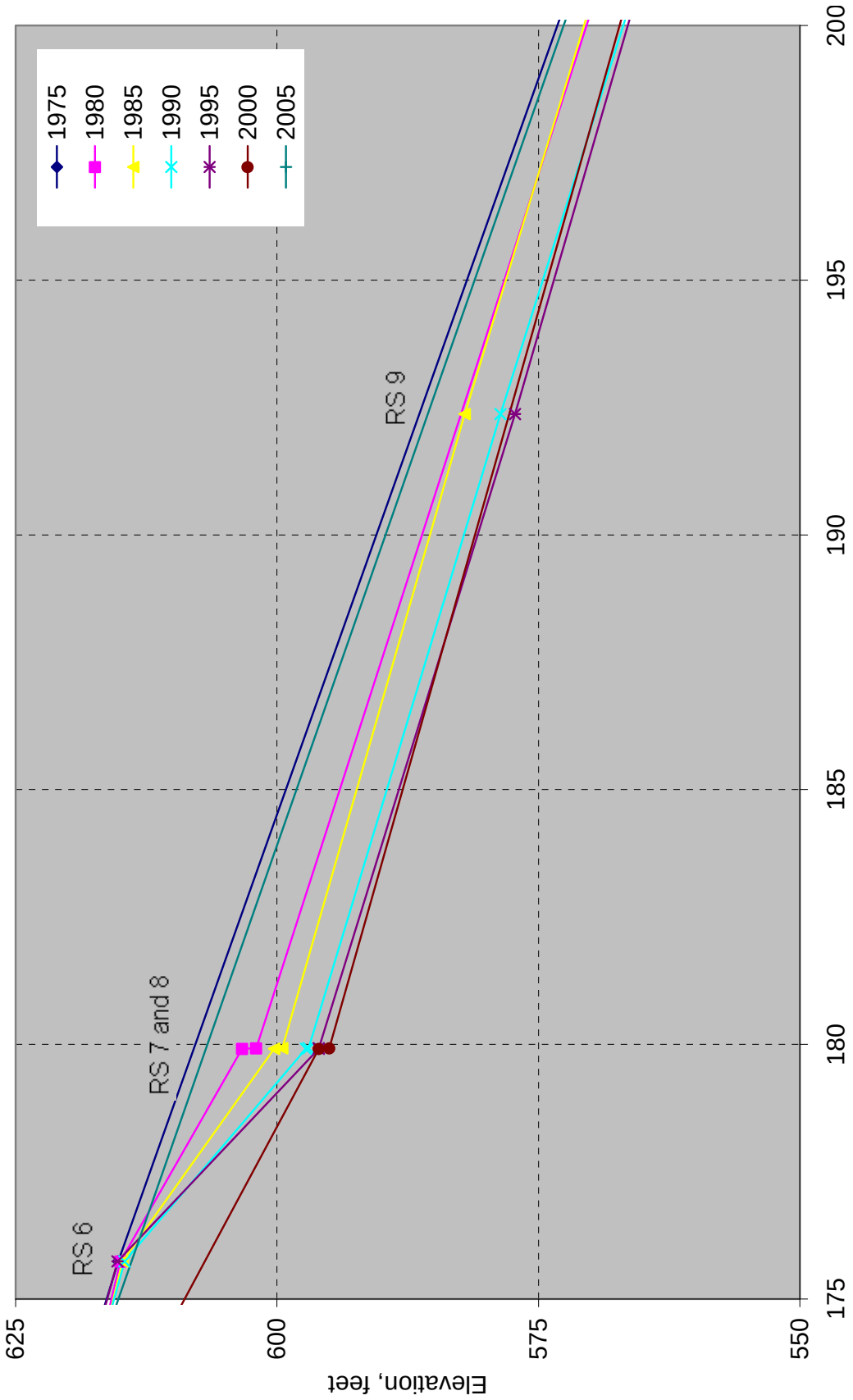


Figure 26. Longitudinal profile of Arkansas River Bed, Oklahoma

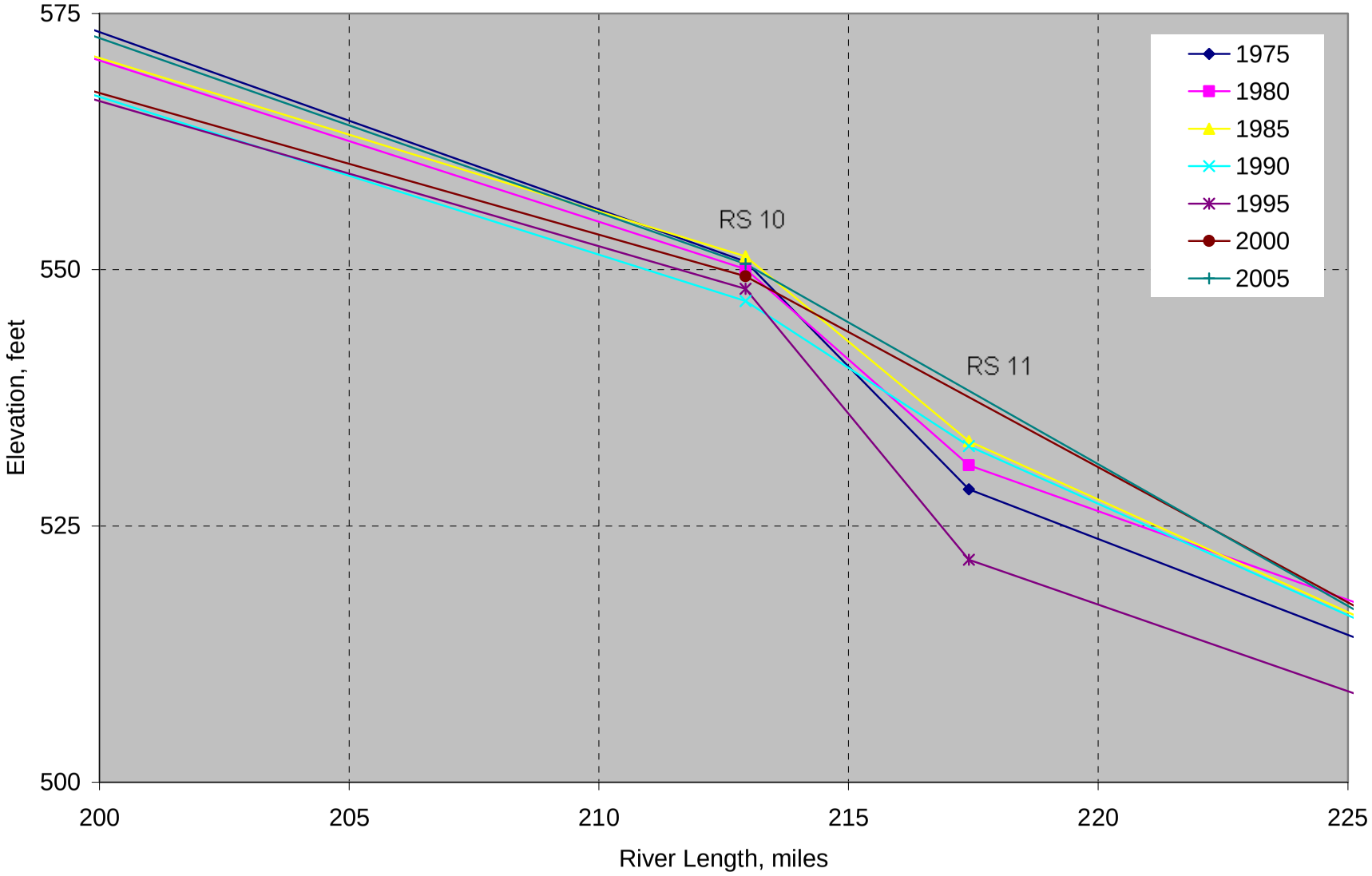


Figure 27. Longitudinal profile of Arkansas River Bed, Oklahoma

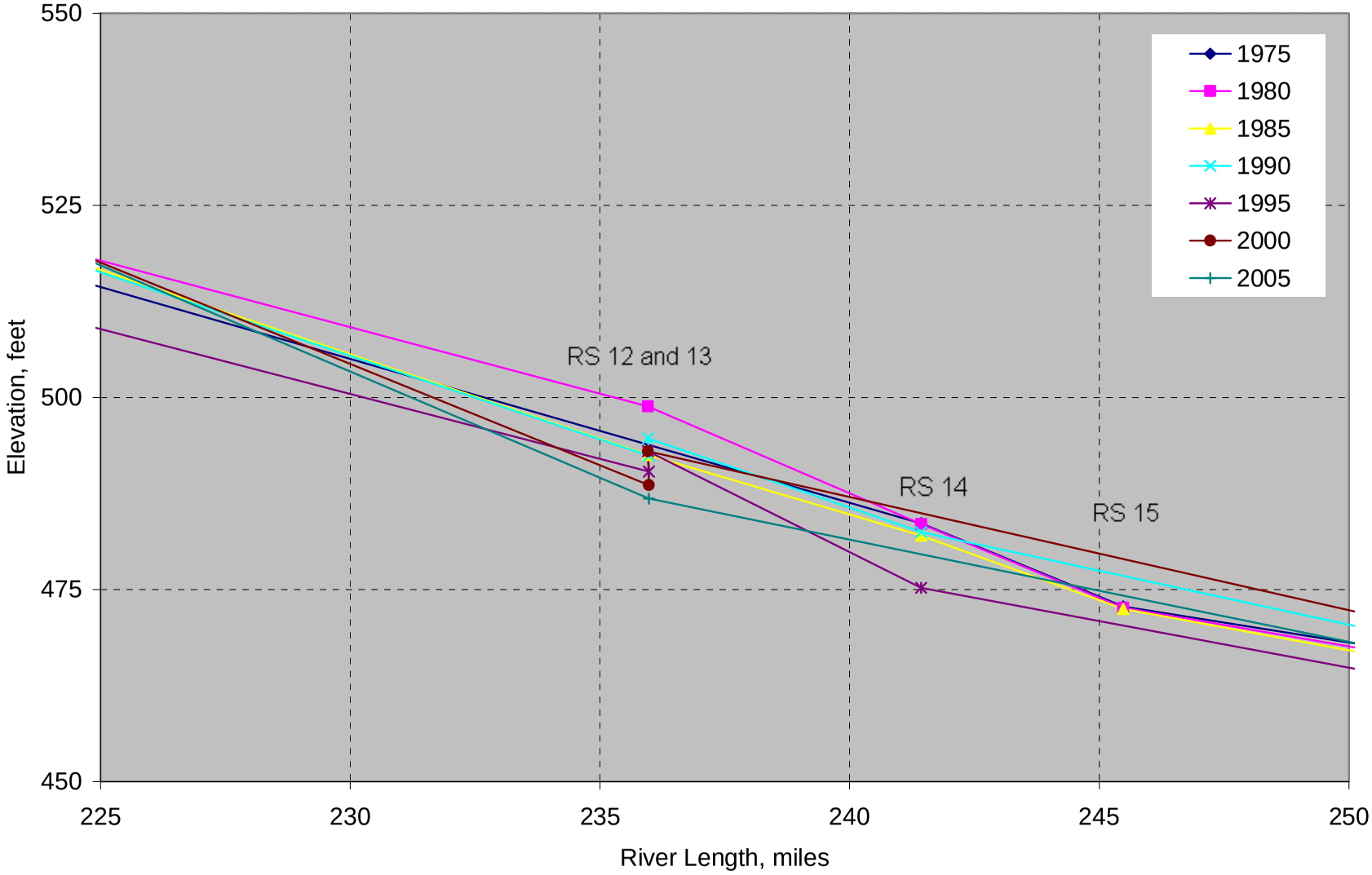


Figure 28. Longitudinal profile of Arkansas River Bed, Oklahoma

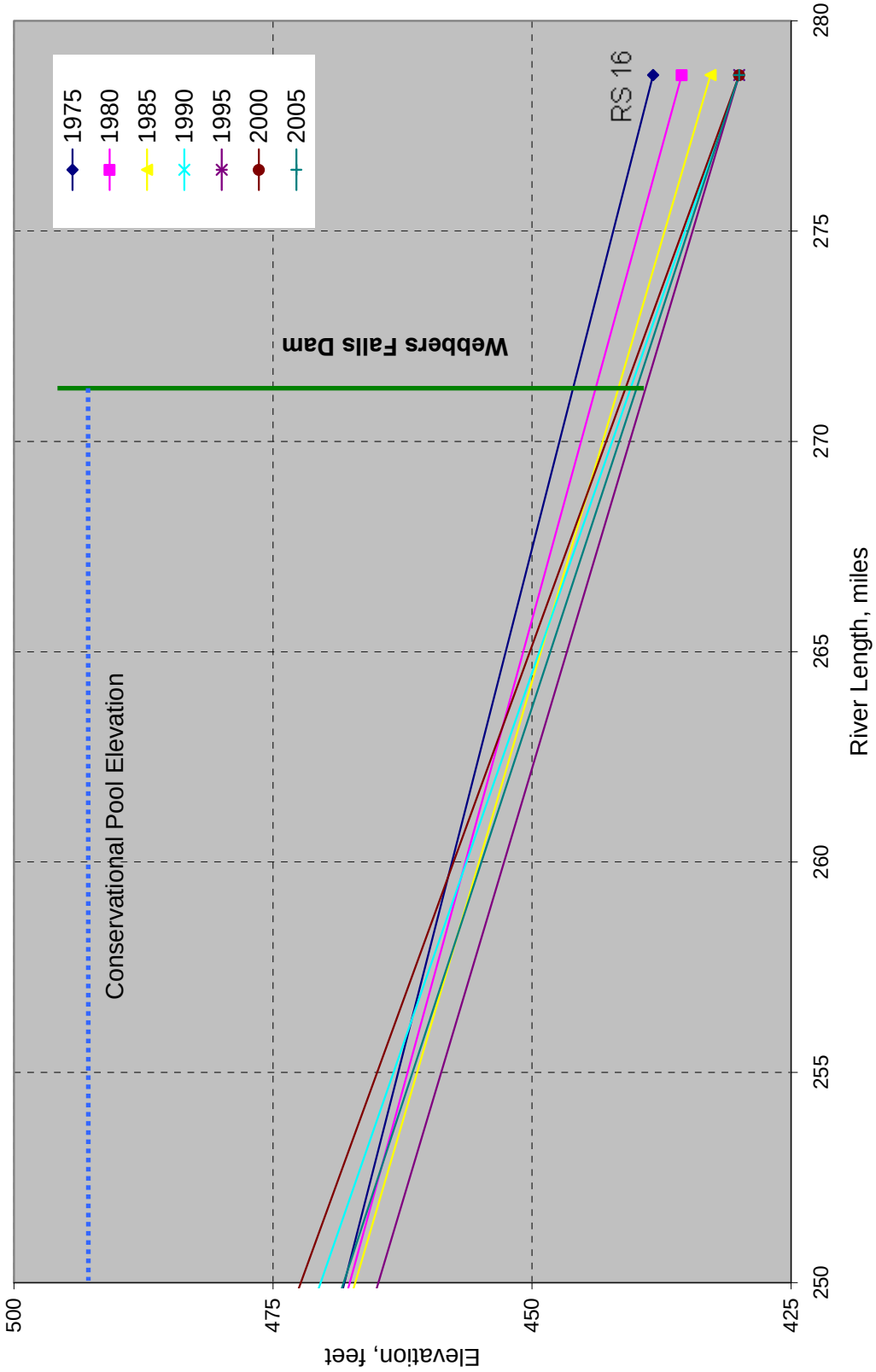


Figure 29. Longitudinal profile of Arkansas River Bed, Oklahoma

VI. DISCUSSION OF RESULTS

Table 5 presents the summary of bridges which have experienced degradation. Along the 252-mile reach of Arkansas River, fourteen bridges have experienced degradation. Among these fourteen bridges, eleven bridges have experienced degradation in the range of 0-5 feet, two have experienced in the range of 5-10 feet, one has experienced degradation more then 10 feet. Sixth and seventh columns in Table 5 present the service year of the bridges through 2007 and corresponding degradation in river bed. Seven bridges in the study reach of Arkansas River have been serving from more then 30 years.

Table 6 presents the number of bridges in the five major river basins of Oklahoma which have experienced degradation more than 5 and 10 feet with 10 year and all service year criteria. In this study, bridges with degradation of 10 feet or more and that have been serving from more then 10 years are determined as critical. River station (RS) 16 at I-40 in Arkansas River has experienced 12.20 feet of degradation and it has been in service since 1968. Therefore, RS 16 (Bridge Key b17051) is determined as critical and recommended for rehabilitation or replacement. Before reconstruction, a detailed hydraulic and geotechnical analysis should be performed.

Table 5. Summary of river bed degradation, Arkansas River

Bri_Key	River Stations	Miles	Highway	Bridge Installed	Years of Construction through 2007	Max. Scour (ft)	Duration (yr)	Scour Rate (ft/yr)
b04603	RS2	99.60	S.H.18	1935	72	0.03	58	0.0005
b19279	RS4	168.64	S.H.51	1976	31	2.50	16	0.1563
b19511	RS5	168.65	S.H 51	1978	29	1.40	16	0.0875
b17052	RS6	175.74	I. 244	1967	40	0.50	27	0.0185
b20580	RS7	179.91	I. 44	1983	24	5.50	12	0.4583
b20326	RS8	179.92	I. 44	1983	24	5.00	13	0.3846
b22107	RS9	192.37	U.S. 64	1988	19	2.75	6	0.4583
b19638	RS10	212.94	S.H 72	1979	28	1.89	15	0.1260
b19512	RS11	217.41	S.H.104	1978	29	4.90	16	0.3063
b22425	RS12	235.98	U.S 69	1989	18	4.17	6	0.6950
b20327	RS13	235.96	U.S 69	1982	25	3.30	13	0.2538
b19835	RS14	241.43	S.H.16	1980	27	8.28	15	0.5520
b17610	RS15	245.48	U.S.62	1969	38	0.50	15	0.0333
b17051	RS16	278.71	I.40	1968	39	12.20	32	0.3813

Table 6. Summary of bridges with degradation in five river basins

River Basin	Degradation in ≥10 years		Degradation with all service year criteria	
	≥ 5.0 feet	≥ 10.0 feet	≥ 5.0 feet	≥ 10.0 feet
Arkansas*	5	1	5	1
Cimarron	6	2	6	2
North Canadian	8	3	9	3
Canadian	7	3	9	5
Washita	12	1	12	1
Total	38	10	41	12

* This report includes the river basin as indicated. Refer to other volumes **I** through **V** for different river basins.

VII. CONCLUSIONS AND RECOMMENDATION

Following conclusions are drawn based on this research:

1. In reach 1 from Kaw Lake to Keystone Dam, maximum degradation of 2.5 feet is observed at river station 4 at S.H. 51.
2. In reach 2 there is severe degradation of river bed downstream of Keystone Lake. The degradation of river bed below Keystone Lake Dam to Webbers Falls Dam occurs over 80.5 miles. The maximum degradation in this reach is 12.2 feet in 32 years at river station 16 at I-40.
3. When I-40 bridge on Arkansas River (Bridge Key b17051) is rehabilitated or replaced, a detailed hydraulic and geotechnical analysis should be performed before reconstruction.

It is recommended that degradation of tributaries is evaluated to determine the structures where flowline is severely degrading in Arkansas River basin.

VIII. REFERENCES

Capesius, J. P. and Lehman, T. W. (2001). “Determination of Channel Change for Selected Streams, Maricopa County, Arizona.” *U.S. Geological Survey*, Water Resources Investigations Report 01-4209

Chein, N. (1985). “Changes in river regimes after the construction of upstream reservoirs.” *Earth Surface Processes and Landform*, *10*, 143-159.

Collier, M., Webb, R.H., and Schmidt, J.C. (1996).Dams and Rivers: Primer on the downstream effects of dams, *US. Geological Survey Circular*, 1126, p.94.

Fassnacth, H. and McClure, E. M. (2003). “Downstream effects of the pelton-round butte hydroelectric project on bedload transport, channel morphology, and channel-bed texture, Lower Deschutes River, Oregon.” *Water Science and Application, 7*: 175-207.

Gilvear, D. J. (1999). “Fluvial geomorphology and river engineering: future roles utilizing a fluvial hydrosystems framework.” *Geomorphology 31*: 229–245.

Gilvear, D.J. and Winterbottom, S.J. (1992). “Channel Change and flood events since 1783 on the regulated river Tay, Scotland.” *Research and management, 7(*3), 247-260.

Graf, W.L. (1999). “Dam nation: A geological census of American dams and their large-scale hydrologic impacts.” *Water Resources Research, 35* (4), 1305-1311.

Kammerer, J.C. (1990). "Largest Rivers in the United States”. *United States Geological Survey* Open File Report 87-242.

Macklin, J. H. (1948). “Concept of the graded river.” *Geological Society of America Bulletin 59*, 463-512.

Oklahoma Water Resources Board, (1990). “Oklahoma Water Atlas.” http://www.owrb.state.ok.us/news/publications/wa/wa.php#maps (Nov. 5, 2006.)

Petts, G.E (1979). “ Complex response of river channel morphology subsequent to reservoir construction.” *Progress in Physical Geography, 3*(3), 329-362.

Tinney, E. R. (1962). “The process of channel degradation.” *Journal of Geophysical Research*, 67(4), 1475-1480.

Williams, G. P. and Wolman, M. G. (1984). “Downstream effects of dams on alluvial Rivers.” Geological Survey Professional Paper 1286, US Government Printing Press, Washington.

Williams, G. P. and Wolman, M. G. (1985). “Effects of dams and reservoirs on surface-water hydrology-changes in rivers downstream from dams.” *USGS National Water Summary 1985*, Water Availability issues, 83-88.

APPENDIX A

TABLES OF CROSS-SECTIONAL GEOMETRIES, ARKANSAS RIVER, OK

Table 7. Structure, Cross-section, and Flowline – Bridge No. 19112 (RS 1) on Arkansas River

Bridge No.	Location	Latitude	Longitude	Highway	Design Year	Length
b19112	14.1 mi E JCT US 77	36-45-54	96-49-12	SH 11	1975	1363

				D / S							U/S		D/S
Pier-No	Distance	Pier-Btm	Top-Ppw	R-bed75	R-bed87	Wse87	Data91	R-bed91	R-bed92	Wse92		R-bed93	R-bed02
W-A	0	930.81	1062.35	1047.84	1047.84	1014	17	1045.35	1047.84	1014	16.3	1046.05	1047.84
	72		1062.45				53	1009.45					
1	195.25	923.47	1062.97	982.00	986.5		83	979.97	988.5		18.3	981.67	982
2	389.25	923.93	1064.99	967.5	971.5		100	964.99	970.5		97	967.99	967.5
3	583.25	925.04	1064.54	963.0	968.5		100	964.54	966.5		100.41	964.14	964.5
4	778.25	923.99	1064.49	962.0	968.5		102	963.49	966.5		100.8	964.69	963.5
5	973.25	925.87	1065.07	960.0	971.5		100	965.07	969.5		98.3	966.77	965.5
	1111.2			961.2									
	1132.8			987.0									
6	1167.3	931.01	1063.00	987.0	988.5		79	984	983.5		79.3	987.7	984
	1221.3		1062.72				53	1009.72					
E-A	1361.3	929.64	1062.35	1047.84	1047.84		16	1046.35	047.84		16.1	1046.25	1047.84

Year	1975	1987	1991	1993	2002
Flowline	960	968.5	963.49	964.14	963.5

Table 8. Structure, Cross-section, and Flowline Details
Bridge No. 4603 (RS 2) on Arkansas River

Bridge No.	Location	Latitude	Longitude	Highway	Design year	Length
b04603	Pawnee-Osage c/l	36-30-12	96-43-48	SH 18	1935	1470.1

Pier-No	Distance	R-bed35	wse35	Pier-Btm	Top-Crb	Data93	R-bed93	wse93
W-A	0	803.00	778.60	795.87	820.50	17.42	803.08	782.37
1	103.58	795.87		770.93	819.84	30.00	789.84	
2	315.97	777.40		767.15	818.47	30.33	788.14	
3	528.26	777.50		764.32	817.11	36.17	780.95	
4	740.56	781.11		765.11	815.75	37.00	778.75	
5	952.85	785.75		760.00	814.39	32.50	781.89	
6	1165.68	790.00		758.30	813.02	34.50	778.52	
7	1267.26	790.00		758.30	812.37	35.00	777.37	
8	1368.84	791.50		758.30	811.72	30.00	781.72	
E-A	1470.51	810.00		782.50	811.07	7.00	804.07	

Year	1975	1980	1985	1990	1995	2000	2005
Flowline	777.38	777.38	777.38	777.37	777.37	777.37	777.36

Table 9. Structure and Flowline Details - Bridge No. 15866 (RS 3) on Arkansas River

Bridge No.	Location	Latitude	Longitude	Highway	Design year	Length
b15866	Pawnee-Osage c/l	36-19-42	96-27-24	SH 99	1963	1019

Year	1963	1993
Flowline	701.1	704.18

Table 10. Structure, Cross-section, and Flowline Details
Bridge No. 19279 (RS 4) on Arkansas River

Bridge No.	Location	Latitude	Longitude	Highway	Design year	Length
b19279	Sand Springs	36-07-48	96-06-30	SH 51	1977	2077.1

Pier-No	Distance	Pier-Btm	Top-Ppw	R-bed76	data92	R-bed92
S-A	0.00	617.00	674.50	665.00	10.00	664.50
1	83.25	612.50	674.00	653.50	25.00	649.00
2	166.25	611.45	673.50	637.50	39.00	634.50
3	249.25	612.77	671.50	623.25	51.00	620.50
4	332.25	612.45	672.30	623.00	50.00	622.30
5	415.25	612.48	672.50	626.25	49.00	623.50
6	498.25	612.61	673.30	630.00	49.00	624.30
7	581.25	612.75	672.33	629.80	48.00	624.33
8	664.25	611.89	672.02	630.00	45.00	627.02
9	747.25	612.02	671.71	631.50	46.00	625.71
10	830.25	613.16	671.40	631.50	45.00	626.40
11	913.25	612.29	671.09	632.50	46.00	625.09
12	996.25	612.43	670.78	633.25	45.00	625.78
13	1079.25	612.57	670.47	634.50	45.00	625.47
14	1162.25	612.70	670.16	636.25	43.00	627.16
15	1245.25	612.84	669.85	637.00	40.00	629.85
16	1328.25	611.98	669.54	637.00	39.00	630.54
17	1411.25	614.11	669.23	640.00	35.00	634.23
18	1494.25	614.25	668.92	645.00		933.92
19	1577.25	613.38	668.61	645.00	35.00	633.61
20	1660.25	613.57	668.360	643.25	34.00	634.30
21	1743.25	614.366	667.99	643.25	33.00	634.99
22	1826.25	612.76	667.68	643.50	32.00	635.68
23	1909.25	612.54	667.37	643.25	29.00	638.37
24	1992.25	611.90	667.06	645.00	26.00	641.06
N-A	2075.50	612.00	666.75	662.00	9.00	657.752

Year	1976	1982	1988	1990	1992	1994
Flowline	623.00	622.78	622.78	622.78	620.50	624.78

Table 11. Structure, Cross-section, and Flowline Details
Bridge No. 19511 (RS 5) on Arkansas River

Bridge No.	Location	Latitude	Longitude	Highway	Design year	Length
b19511		36-07-48	96-06-30	SH 51	1978	2077.6

Pier-No	Distance	Pier-Btm	Top-Ppw	R-bed78	Data92	R-bed92
N-A	0	616	673.59	662	11	662.59
1	83.25	612.19	672.19	662	27	645.19
2	166.25	612.14	671.14	650	29	642.14
3	249.25	612.46	670.46	624.25	32	638.46
4	332.25	612.14	670.14	624.25	33	637.14
5	415.25	612.17	670.17	626.25	34	636.17
6	498.25	612.31	670.31	628.75	35	635.31
7	581.25	612.44	670.44	628.75	36	634.44
8	664.25	612.58	670.58	628	37	633.58
9	747.25	612.71	670.71	628	41	629.71
10	830.25	612.85	670.85	629	42	628.85
11	913.25	610.99	670.99	630	43	627.99
12	996.25	611.12	671.12	635		
13	1079.25	612.26	671.26	637		
14	1162.25	612.4	671.4	637		
15	1245.25	612.53	671.53	637.5		
16	1328.25	612.67	671.67	637		
17	1411.25	612.8	671.8	637	No Data	
18	1494.25	612.94	671.94	644		
19	1577.25	612.08	672.08	641.5		
20	1660.25	612.21	672.21	640		
21	1743.25	611.35	672.35	641		
22	1826.25	611.45	672.45	641.25		
23	1909.25	611.23	672.23	642.5		
24	1992.25	610.59	671.59	649		
S-A	2075.5	616	670.55	661.55		

Year	1978	1982	1988	1990	1992	1994
Flowline	624.25	622.12	624.14	624.14	619.14	622.85

Table 12. Structure and Flowline Details Bridge No. 17052 (RS 6) on Arkansas River

Bridge No.	Location	Latitude	Longitude	Highway	Design year	Length
b17052	4.1 ml N I-44, Tulsa	36-09-42	95-55-54	I-244	1967	2966

Year	1967	1992	1994
Flowline	615.5	614.5	615

Table 13. Structure and Flowline Details Bridge No. 20580 (RS 7) on Arkansas River

Bridge No.	Location	Latitude	Longitude	Highway	Design year	Length
b20580	0.7 mi E UF 75	36-09-42	95-48-24	I-44	1983	2404.9

Year	1983	1992	1994	1995
Flowline	601.5	596	596	596

Table 14. Structure and Flowline Details Bridge No. 20326 (RS 8) on Arkansas River

Bridge No.	Location	Latitude	Longitude	Highway	Design year	Length
b20326	0.7 mi E UF 75	36-09-42	95-48-24	I-44	1983	2404.9

Year	1982	1992	1994	1995
Flowline	601	596	596	596

Table 15. Structure, Cross-section and Flowline Details
Bridge No. 22107 (RS 9) on Arkansas River

Bridge No.	Location	Latitude	Longitude	Highway	Design year	Length
b22107	4.5 mi S of Turnpike	35-54-30	95-45-24	US 64	1988	1939.92

Pier-No	Distance	Pier-Btm	Top-Ppw	R-bed88	Data92	R-bed92	Data94	R-bed94	wse 94
N-A	0	568	616	604	10	606	10	606	588.75
1	102.958	555	617.5	600	18	599.5	18	599.5	
2	204.958	555.5	619	599	21	598	20	599	
3	306.958	556	620.25	596	27	593.25	27	593.25	
4	408.958	556	621	585.5	37	584	36	585	
5	510.958	556.5	621.25	580	44	577.25	44	577.25	
6	612.958	556	622.25	583	41	581.25	40	582.25	
7	714.958	556	623	584	41	582	41	582	
8	816.958	556.5	623.75	582	43	580.75	43	580.75	
9	918.958	557.5	625.25	580	43	582.25	44	581.25	
10	1020.958	558	625.25	584	43	582.25	44	581.25	
11	1122.958	558	623.75	587	41	582.75	40	583.75	
12	1224.958	557.5	623	588	38	585	38	585	
13	1326.958	558	622.25	590	35	587.25	35	587.25	
14	1428.958	557.5	621.25	590	34	587.25	34	587.25	
15	1530.958	557.5	620.5	583	37	583.5	37	583.5	
16	1632.958	557.5	619	584	37	582	37	582	
17	1734.958	557.5	618	590.5	29	589	29	589	
18	1836.958	560.5	617.5	597	20	597.5	20	597.5	
S-A	1939.916	575	616	606	9	607	9	607	

Year	1985	1990	1995
Flowline	582.0625	578.625	577.25

Table 16. Structure, Cross-section, and Flowline Details Bridge No. 19638 (RS 10) on Arkansas River

Bridge No.	Location	Latitude	Longitude	Highway	Design Year	Length
b19638	4.6 mi N Muskogee Co	35-55-54	95-39-18	SH 72	1979	1700.5

Pier-No	Distance	Pier-Btm	Top-Ppw	R-bed79	data87	R-bed87	Data94	R-bed94
S-A	0	539.00	582.91	570.00	15.10	567.81	11	571.91
	90		583.77				19	564.77
1	100.25	534.69	583.96	560.00	21.90	562.06	21	562.96
2	200.25	534.69	584.96	554.00	32.20	552.76	33	551.96
3	300.25	535.64	585.91	552.20	33.70	552.21	34	551.91
4	400.25	535.60	586.96	552.50	34.60	552.36	36	550.96
5	500.25	535.65	587.92	552.4	39.50	548.42	37	550.92
6	600.25	536.36	588.63	553.50	39.00	549.63	39	549.63
7	700.25	536.9	589.17	554.4	36.40	552.77	40	549.17
8	800.25	537.15	589.42	554.80	36.80	552.62	41	548.42
9	900.25	537.11	589.38	554.00	37.10	552.28	39	550.38
10	1000.25	536.90	589.17	554.00	36.00	553.17	39	550.17
11	1100.25	536.40	588.67	554.00	36.90	551.77	39	549.67
12	1200.25	535.61	587.88	553.00	37.30	550.58	36	551.88
	1250.00		587.42				39	548.42
13	1300.25	535.69	586.96	551.00	37.10	549.86	38	548.96
14	1400.25	535.69	585.96	549.80	35.70	550.26	35	550.96
15	1500.25	535.64	584.91	550.00	37.10	547.81	37	547.91
	1530.00		584.63				21	563.63
	1532.75			563.50				
	1550.00		584.44					
16	1600.25	539.69	583.96	562.00	18.00	565.96	19	564.96
	1650.32			571.50				
	1680.00		583.20				17	566.20
N-A	1700.50	547.60	582.91	571.50	13.00	569.91	11	571.91

Year	1979	1987	1989	1994
Flowline	549.80	547.81	546.71	547.91

Table 17. Structure, Cross-section, and Flowline Details – Bridge No. 19512 (RS 11) on Arkansas River

Bridge No.	Location	Latitude	Longitude	Highway	Design Year	Length
B19512	2 mi E JCT US 64	35-49-12	95-40-06	SH 104	1978	2202.5

Pier-No	Distance	Pier-Btm	Top-Ppw	R-bed78	Data87	R-bed87	Data92	R-bed92	Wse92	Data94	R-bed94	Wse94
W-A	0.00	521.70	569.27	560.00	10.30	558.97	11.00	558.27	536.87	10.00	559.27	537.10
	38.00			540.60		552.81		552.00			553.00	
	50.00		569.49	541.20		550.86		550.01		26.00	543.49	
1	100.25	516.40	569.72	541.80	27.00	542.72	28.00	541.72		27.00	542.72	
2	200.25	516.82	570.16	541.80	29.00	541.16	29.00	541.16		29.00	541.16	
3	300.25	517.11	570.61	541.80	30.50	540.11	31.00	539.61		30.00	540.61	
4	400.25	517.27	571.05	542.00	30.50	540.55	32.00	539.05		29.00	542.05	
5	500.25	517.60	571.50	535.00	31.00	540.50	33.00	538.50		32.00	539.50	
	575.25		571.07	535.00		538.33		535.58		39.00	532.07	
6	600.25	517.79	571.60	535.00	34.00	537.60	37.00	534.60		34.00	537.60	
7	700.25	517.95	571.70	534.20	31.00	540.70	36.00	535.70		32.00	539.70	
8	800.25	518.07	571.80	534.00	31.50	540.30	37.00	534.80		33.00	538.80	
9	900.25	518.16	571.90	534.00	31.00	540.90	35.00	536.90		33.00	538.90	
10	1000.25	518.21	572.00	532.80	32.20	539.80	37.00	535.00		33.00	539.00	
11	1100.25	518.29	572.10	532.00	31.50	540.60	40.00	532.10		35.00	537.10	
12	1200.25	518.21	571.87	533.00	29.80	542.07	40.00	531.87		35.00	536.87	
13	1300.25	518.16	571.63	531.80	30.90	540.73	39.00	532.63		35.00	536.63	
14	1400.25	518.07	571.40	530.20	30.00	541.40	38.00	533.40		35.00	536.40	
15	1500.25	517.85	571.17	531.00	31.30	539.87	37.00	534.17		35.00	536.17	
16	1600.25	517.79	570.93	530.00	36.00	534.93	34.00	536.93		35.00	535.93	
17	1700.25	517.60	570.70	538.00	34.80	535.90	35.00	535.70		36.00	534.70	

Table 17 Cont.

Pier-No	Distance	Pier-Btm	Top-Ppw	R-bed78	Data87	R-bed87	Data92	R-bed92	Wse92	Data94	R-bed94	Wse94
	1762.75			549*0		536.38		536.18			533.30	
18	1800.25	517.37	570.46	543.50	33.80	536.66	34.00	536.46		38.00	532.46	
18	1900.25	517.11	570.22	547.80	36.00	534.22	32.00	538.22		39.00	531.22	
	1950.25		570.10	546.90		540.35		535.74		45.00	525.10	
	1985.25		570.00	546.27		544.64	36.00	534.00			531.32	
20	2000.25	516.82	569.98	546.00	23.50	546.48	24.00	545.98		36.00	533.98	
	2020.25		569.93	546.60		547.33		546.73		24.00	545.93	
21	2100.25	516.49	569.74	549.00	19.00	550.37	20.00	549.74		19.00	550.74	
	2180.25		569.55	557.78		558.05		554.25		14.00	555.55	
	2185.25		569.53	558.33		558.51	15.00	554.53			556.77	
E-A	2200.50	523.50	569.50	560.00	9.60	559.90	10.00	559.50		9.00	560.50	

Year	1978	1987	1992	1994
Flowline	530.00	534.22	53.87	525.10

Table 18. Structure, Cross-section, and Flowline Details
Bridge No. 22425 (RS 12) on Arkansas River

Bridge No.	Location	Latitude	Longitude	Highway	Design year	Length
b22425	3.5 mi N JCT US62 W	35-48-30	95-24-00	US 69	1989	2700.3

Pier-No	Distance	Pier-Btm	Top-Ppw	R-bed89	Data91	R-bed91	wse91
S-A	0	480	535.85	527.35	11	524.85	497.28
	80		536.57	517.286102	23	513.57	
1	100.16	472.75	536.75	514.75	23	513.75	
	145		537.15	505.4457	24	513.15	
	190		537.48	496.1082	36	501.48	
2	200.16	472.58	537.58	494	40	497.58	
3	300.16	474.79	538.29	495	44	494.29	
4	400.16	473.58	539.08	497	46	493.08	
5	500.16	473.23	539.73	500	44	495.73	
6	600.16	473.24	540.24	499.6	48	492.24	
7	700.16	474.33	540.83	498.75	50	490.83	
8	800.16	473.78	541.28	498.1	50	491.28	
9	900.16	475.08	541.58	497.12	47	494.58	
10	1000.16	475.47	541.97	499.75	45	496.97	
11	1100.16	474.71	542.21	504.9	46	496.21	
12	1200.16	474.82	542.32	506.82	48	494.32	
13	1300.16	474.5	542.5	506	48	494.5	
14	1400.16	475.05	542.55	507.05	47	495.55	
15	1500.16	473.95	542.45	506.45	44	498.45	
16	1600.16	473.93	542.43	503.93	42	500.43	
17	1700.16	474.29	542.28	503.26	40	502.28	
18	1800.16	472.48	541.98	506.98	40	501.98	
19	1900.16	473.76	541.76	502.78	39	502.76	
	1970.16		541.55	503.564	42	499.55	
20	2000.16	472.4	541.4	503.9	44	497.4	
21	2100.16	472.4	540.9	499.4	46	494.9	
22	2200.16	473.98	540.48	500.4	42	498.48	
	2250.16		540.195	506.405	41	499.195	
23	2300.16	473.41	539.91	512.41	28	511.91	
24	2400.16	473.71	539.21	514.21	27	512.21	
25	2500.16	473.09	538.09	514.15	26	512.59	
26	2600.16	472.83	537.83	514.33	25	512.83	
	2650.16		537.385	521.37373	25	512.385	
N-A	2700.32	480	536.94	528.44	11	525.694	

Year	1989	1991	1995
Flowline	494	490.83	489.83

Table 19. Structure, Cross-section, and Flowline Details
Bridge No. 20327 (RS 13) on Arkansas River

Bridge No.	Location	Latitude	Longitude	Highway	Design year	Length
b20327	3.4 mi N JCT US 62 W	35-48-30	95-24-00	US 69	1982	2700

Pier-No	Distance	Pier-Btm	Top-Ppw	R-bed82	Data87	R-bed87	wse87
S-A	0	486.00	536.92	522.00	11.70	525.22	500.76
1	100	472.77	537.77	515.00	21.00	516.77	
	150		538.19		21.50	516.69	
2	200	473.11	538.61	496.30	38.00	500.61	
3	300	474.85	539.35	496.70	42.00	497.35	
4	400	473.61	540.11	497.00	44.00	496.11	
5	500	473.26	540.76	500.00	46.30	494.46	
6	600	474.30	541.30	499.00	45.00	496.30	
7	700	474.35	541.85	498.60	42.30	499.55	
8	800	473.80	542.30	498.60	42.50	499.80	
9	900	474.64	542.64	498.60	42.30	500.34	
10	1000	475.49	542.99	499.00	40.00	502.99	
11	1100	474.74	543.24	502.60	43.50	499.74	
12	1200	474.87	543.37	506.25	41.80	501.57	
13	1300	474.02	543.52	503.75	39.60	503.92	
14	1400	475.07	543.57	507.10	40.00	503.57	
15	1500	474.00	543.50	502.50	34.50	509.00	
16	1600	473.95	543.45	502.75	34.20	509.25	
17	1700	473.80	543.30	502.76	35	508.30	
18	1800	472.53	543.03	507.00	34	509.03	
19	1900	473.78	542.78	502.3	33.3	509.48	
20	2000	472.42	542.42	503.1	40.2	502.22	
21	2100	472.45	541.95	498.5	42	499.95	
22	2200	473	541.5	500	40.8	500.70	
	2275		541.18		40.8	500.38	
23	2300	473.44	540.964	513.25	28.3	512.64	
24	2400	472.77	540.27	512.7	26.3	513.97	
25	2500	472.11	539.631	512.8	25.5	514.11	
26	2600	471.35	538.85	514.8	24.5	514.35	
N-A	2700	486	538.02	523.5	13	525.02	

Year	1982	1985	1987	1990	1991	1995
Flowline	496.30	492.5	495.2	494.75	493	493

Table 20. Structure, Cross-section, and Flowline Details
Bridge No. 19835 (RS 14) on Arkansas River

Bridge No.	Location	Latitude	Longitude	Highway	Design year	Length
B19835	1.7 mi n JCT U.S. 62	35-47-25	95-19-48	SH 16	1980	900.50

Pier-No	Distance	Pier-Btm	Top-Ppw	R-bed80	Data87	R-bed87	wse87
S-A	0	489.94	536.46	524.20	12.5	523.96	490.82
	30		536.4	512.02	20	516.4	
	60		536.33	494.95	45	491.33	
1	100.25	472.78	536.26	483.50	51.8	484.46	
2	200.25	472.58	536.06	484.00	54.2	481.86	
3	300.25	472.34	535.82	487.50	55	480.82	
4	400.25	472.18	535.66	488.00	50	485.66	
5	500.25	471.98	535.46	487.50	46.3	489.16	
6	600.25	471.74	535.22	488.30	44	491.22	
7	700.25	471.58	535.06	492.25	40	495.06	
8	800.25	471.38	534.86	503.50	33.8	501.06	
	850.62		534.74	511.79	23	511.74	
	865.62		534.71	514.26	23	511.71	
n-a	900.5	480	534.62	520.00	12	522.62	

Year	1980	1984	1985	1987	1990	1992	1995
Flowline	483.50	483	482	480.82	482.46	481.46	475.22

Table 21. Structure and Flowline Details
Bridge No. 17610 (RS 15) on Arkansas River

Bridge No.	Location	Latitude	Longitude	Highway	Design Year	Length
b17610	2.4 Mi E JCT SH 16	35-46-24	95-15-54	US 62	1969	1497

Year	1969	1984
Flowline	473.00	472.50

Table 22. Structure, Cross-section, and Flowline Details

Bridge No. 17051 (RS 16) on Arkansas River

Bridge No.	Location	Latitude	Longitude	Highway	Design Year	Length
b17051	Muskogee- Sequoyah	35-29-06	95-04-42	I-40	1968	1988.5

Pier-No	Distance	Wse68	R-bed68	Pier-Btm	R-bed90	R-bed95
W-A	0		515.00	427.50	515.00	515.00
	75.75		503.04		472.00	472.00
	101.25		467.50		472.00	472.00
1	126.25		467.00	423.98	472.00	472.00
	168.25	460	464.03		472.00	472.00
2	251.25	460	458.00	422.97	443.00	441.00
3	377.25	460	444.50	424.13	434.00	433.00
4	578.25	460	442.50	424.96	432.00	430.00
5	908.25	460	442.20	425.02	430.00	432.00
6	1109.25	460	442.50	425.72	435.00	435.00
7	1235.25	460	442.50	427.16	436.00	436.00
8	1360.25	460	443.00	422.13	435.00	441.00
9	1485.25	460	445.00	421.70	443.00	448.00
	1577.25	460	468.00		456.14	456.03
10	1611.25	460	467.00	421.68	461.00	459.00
	1617.375	460	466.80		461.05	459.05
	1642.87	460	455.50		461.25	459.25
	1713.25	460	466.50		461.81	459.81
11	1737.25	460	460.00	430.18	462.00	460.00
12	1862.25	460	466.20	429.13	463.50	460.00
	1900.12	460	465.75		465.75	465.75
E-A	1988.50	460	504.20	436.00	504.00	504.00

Year	1975	1980	1985	1990	1995	2000	2005
Flowline	438.32	435.55	432.77	430	430	430	430

APPENDIX B

FLOWPATH OF ARKANSAS RIVER IN OKLAHOMA

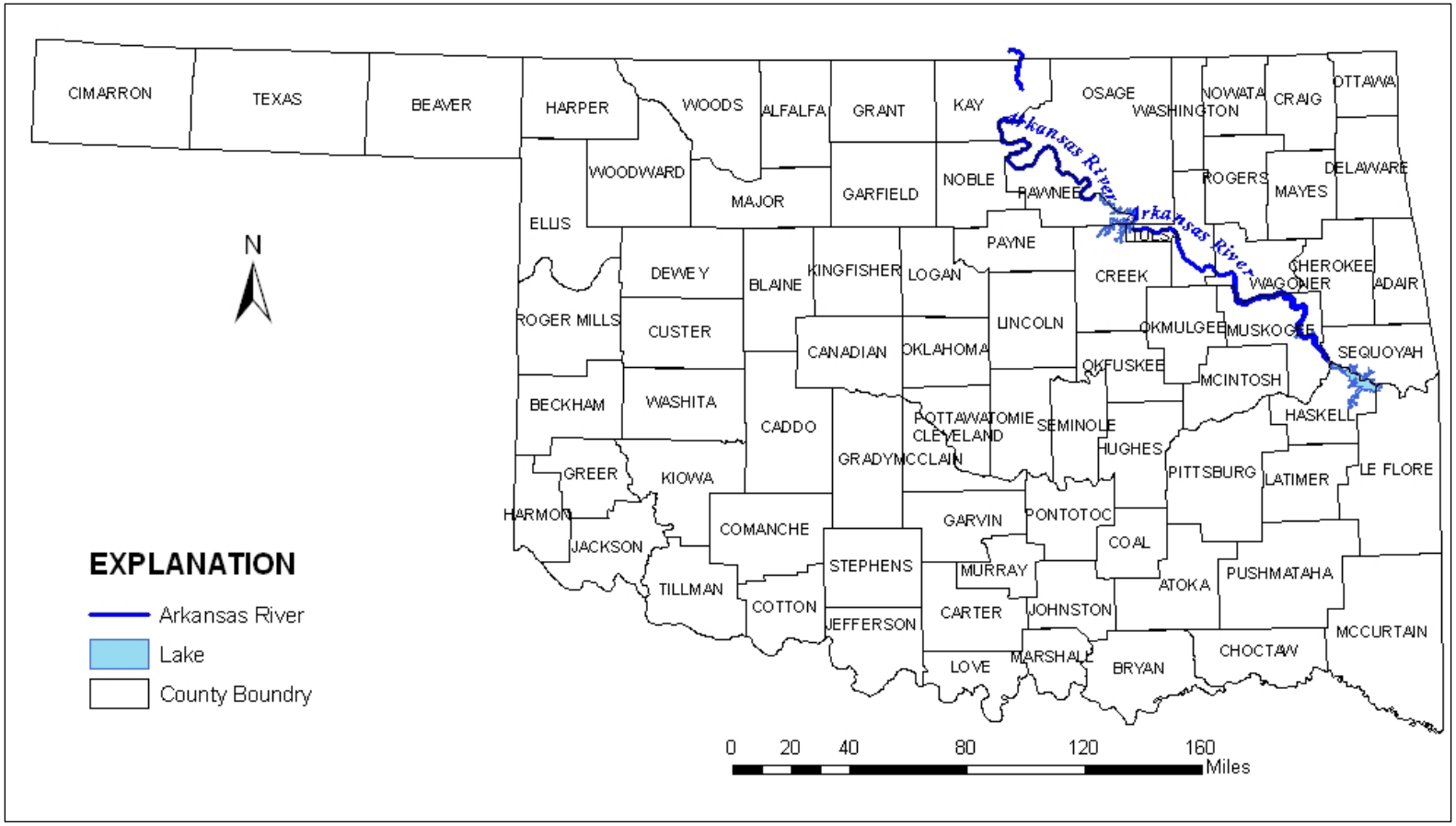


Figure B-1. Flowpath of Arkansas River in Oklahoma

QUAD MAP LEGEND
ARKANSAS RIVER, OKLAHOMA

Source: http://www.okladot.state.ok.us/hqdiv/p-r-div/maps/2003county/index.htm

County Name
Kay
Noble
Osage
Pawnee
Tulsa
Wagoner
Muskogee
Sequoyah
Haskell

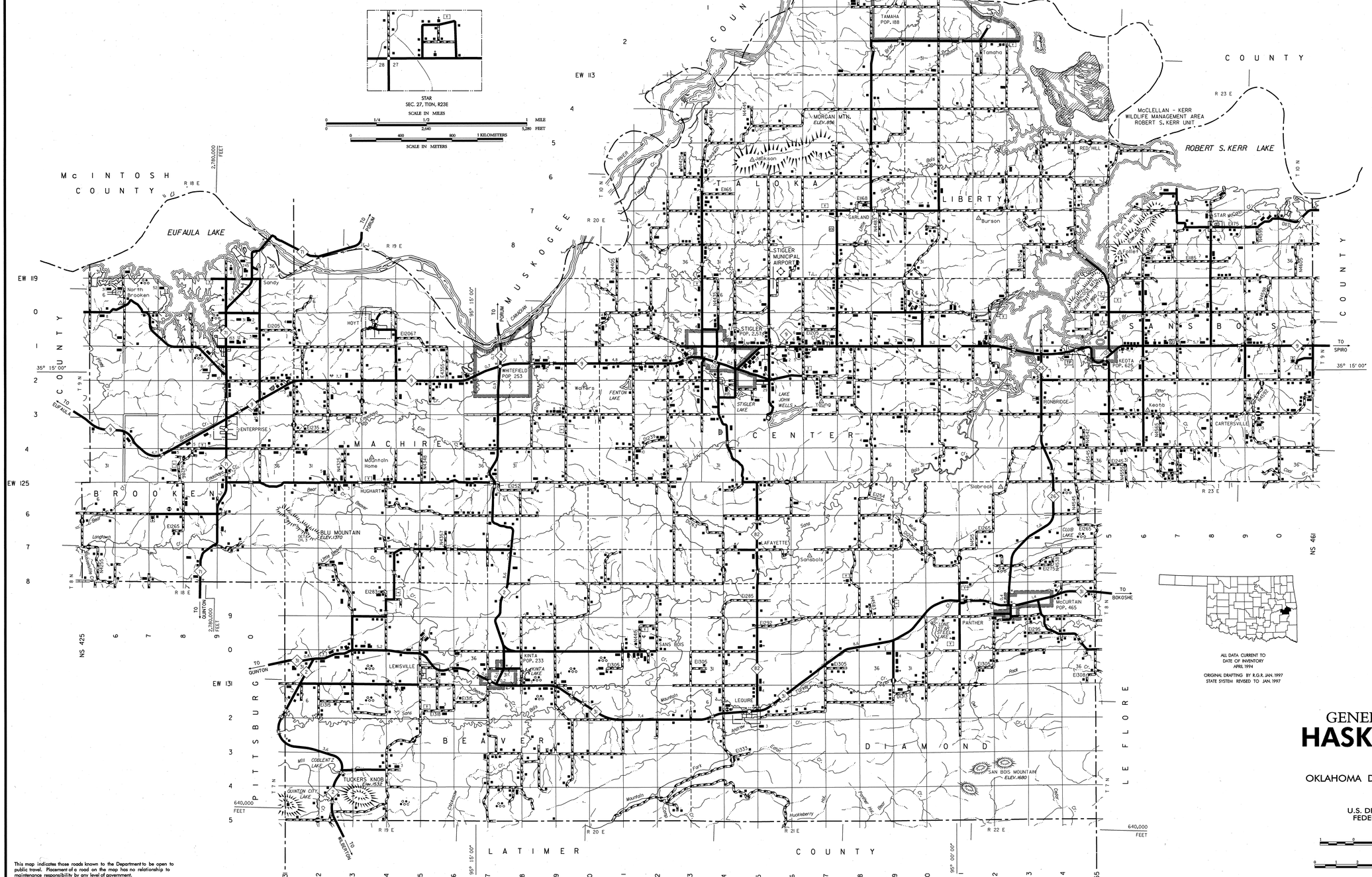
LEGEND

- U.S.NUMBERED HIGHWAY
- STATE NUMBERED HIGHWAY
- INTERSTATE HIGHWAY ROUTE
- PAVED ROAD
- GRAVEL ROAD
- GRADED & DRAINED ROAD
- UNIMPROVED ROAD
- PRIMITIVE ROAD
- PROJECTED ROAD
- RESIDENTIAL ROAD
- COUNTY ROAD ID NO.
- MILEAGE BETWEEN POINTS
- DIVIDED HIGHWAY, 4 OR MORE LANES
- UNDIVIDED HIGHWAY, 3 OR MORE LANES
- TRAFFIC CIRCLE
- HIGHWAY GRADE SEPARATION
- TRAFFIC INTERCHANGE
- STATE LINE
- COUNTY LINE
- CIVIL TOWNSHIP LINE
- SECTION LINE
- RURAL DEVELOPMENT AREA
- GOVERNMENT PROPERTY LINE
- MATCH LINE
- COUNTY SEAT
- TOWN CENTER
- CORPORATE LIMITS
- CIVIL TOWNSHIP, ROAD IN PLACE
- INSET BOUNDARY

- RAILROAD, ANY NUMBER OF TRACKS
- RAILROAD WITH STATION INDICATED
- GRADE CROSSING
- UNDERPASS, R.R. ABOVE
- OVERPASS, R.R. BELOW
- RAILROAD ON STREET
- MILITARY AIRFIELD
- AIRPORT WITH COMPLETE FACILITIES
- AIRPORT WITH LIMITED FACILITIES
- LANDING STRIP, PRIVATE FIELD
- AIRPORT, GENERAL OUTLINE OF FIELD RUNWAYS SHOWN IN POSITION
- ROADSIDE PARK Picnic Grounds PLAYGROUNDS
- BATHING BEACH OR SWIMMING POOL
- SCENIC SITE
- MOTEL
- CAMP OR LODGE, Permanent with buildings SP–State, CP–County
- SMALL PARK MP–Municipal, TP–Trailer Park
- FOREST RANGER STATION
- OBSERVATION OR LOOKOUT TOWER
- CAMP SITE
- FISH HATCHERY
- GOLF COURSE OR COUNTRY CLUB
- ATHLETIC FIELD OR AMUSEMENT PARK
- FAIRGROUNDS, RACE COURSE
- DWELLING
- NUMBER OF DWELLINGS CLOSELY SPACED
- COMBINED BUSINESS AND DWELLING
- POST OFFICE
- POST OFFICE COMBINATIONS

- ELEVATION ABOVE SEA LEVEL
- MOUNTAIN RANGE, BUTTE OR MESA
- SMALL MONUMENT
- MARSH OR SWAMP LANDS
- DRAINAGE DITCH
- IRRIGATION DITCH
- LAKE, RESERVOIR OR POND WITH DAM
- ROAD OVER DAM
- DRY LAKE SUBJECT TO FLOOD
- SMALL BRIDGES CLOSELY SPACED
- HIGHWAY BRIDGE, OVER 20FT. IN LENGTH
- GENERAL BRIDGE, LONG CROSSING
- ARCH BRIDGE
- TRUSS BRIDGE,W–WOOD,S–STEEL,C–CONCRETE
- CONCRETE DIP OR FORD
- FORD ROAD ESTABLISHED
- INTERMITTENT STREAM
- NARROW STREAM
- DOCK PIER OR LANDING
- NAVIGABLE STREAM WITH LOCK & DAM
- WIDE STREAM OR RIVER
- TRIANGULATION STATION

- SEASONAL DWELLINGS
- CHURCH OR OTHER RELIGIOUS BUILDING
- CEMETERY
- CHURCH WITH CEMETERY ADJACENT
- REST HOME
- HOSPITAL
- SMALL BUSINESS
- INDUSTRY
- SAW MILL
- MINE SHAFT OR DRIFT
- OIL OR GAS FIELD
- GAUGING OR PUMPING STATION
- WAREHOUSE
- GRAVEL PIT
- QUARRY
- SCHOOL
- COMMUNITY HALL OR LODGE
- DRIVE-IN THEATER
- CORRECTIONAL INSTITUTION
- HIGHWAY GARAGE
- JUNK YARDS & DUMPS A–Automobile, B–Scrap Building Material, D–Refuse, Garbage or trash dump, F–Sanitary Fill, G–Other
- SEWAGE DISPOSAL PLANT
- WATER SUPPLY STAND PIPE
- POWER PLANT
- BOOSTER STATION
- POWER SUBSTATION
- TELEVISION OR RADIO STATION
- MILITARY INSTALLATION



STAR
SEC. 27, T10N, R23E

LEQUIRE
SEC. 5, T7N, R21E

LEWISVILLE
SEC. 35, T8N, R19E

ENTERPRISE
SEC. 26,27 T8N, R19E

HOYT
SEC. 9, T9N, R19E

GENERAL HIGHWAY MAP
HASKELL COUNTY
OKLAHOMA

PREPARED BY THE
OKLAHOMA DEPARTMENT OF TRANSPORTATION
PLANNING DIVISION

IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

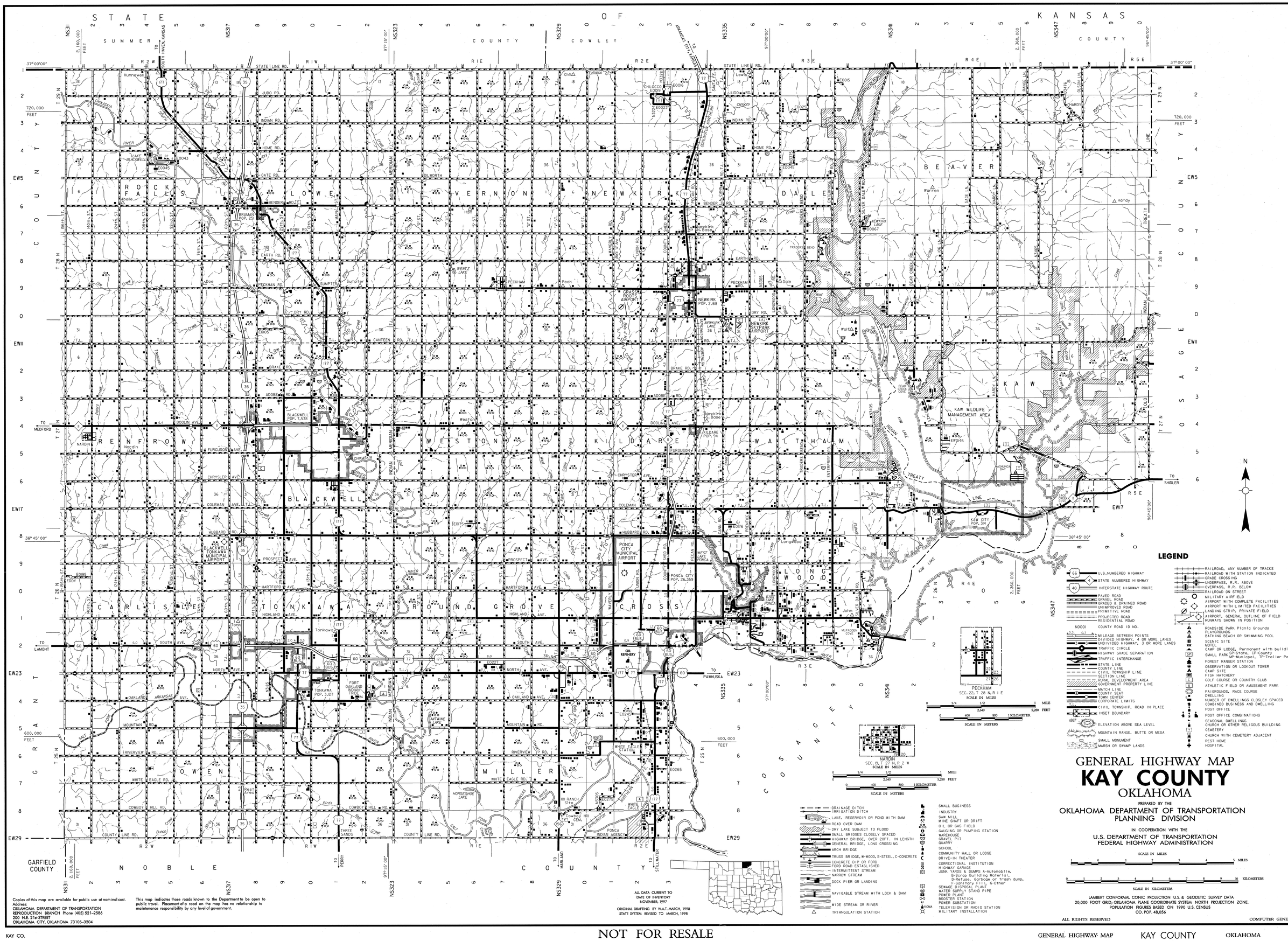
This map indicates those roads known to the Department to be open to public travel. Placement of a road on the map has no relationship to maintenance responsibility by any level of government.

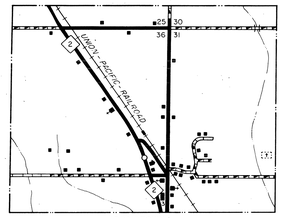
Copies of this map are available for public use at nominal cost.
Address:
OKLAHOMA DEPARTMENT OF TRANSPORTATION
REPRODUCTION BRANCH Phone (405) 521-2586
200 N.E. 21st STREET
OKLAHOMA CITY, OKLAHOMA 73105-3204

ALL RIGHTS RESERVED

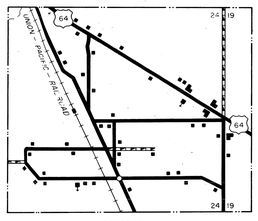
COMPUTER GENERATED

NOT FOR RESALE

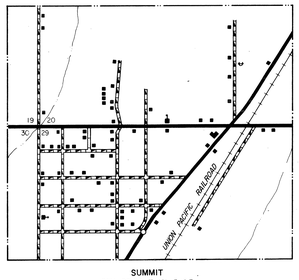

STATE OF KANSAS
SUMMER COUNTY
COWLEY COUNTY
SUMNER COUNTY
OSAGE COUNTY
GRANT COUNTY
GARFIELD COUNTY
NOBLE COUNTY
KAY COUNTY
ROCK FALLS
LOWE
VERNON
NEWKIRK
DALE
RENFROW
WESTON
KILDARE
WALTHAM
BLACKWELL
CARLISLE
TONKAWA
ROUND GROVE
LONG
CROSS
OWEN
MILLER
BEAVER
KAW
NEWKIRK POP. 2,168
BLACKWELL POP. 7,538
KILDARE POP. 94
PONCA CITY POP. 26,359
KAW CITY POP. 54
BRAMAN POP. 279
TONKAWA POP. 3,127
PECKHAM
NARDIN
KAW WILDLIFE MANAGEMENT AREA
GRASS ROOTS AIRPORT
NEWKIRK MUNICIPAL AIRPORT
BLACKWELL TONKAWA MUNICIPAL AIRPORT
PONCA CITY MUNICIPAL AIRPORT
OIL REFINERY
FORT OAKLAND INDIAN TRIBE
PONCA INDIAN AGENCY
WHITE EAGLE STATION
IOI RANCH Site
Rest Area
Hunnewell
Lamont
Medford
Pawhuska
Perry
Marland
Stillwater
Hardy
Warren
Wolf
Dale
Bend
Peck
Sumpter
Weston
Longwood
John
Jim
Lee
Chilocco
Kaw Lake
Newkirk Lake
Wentz Lake
Horseshoe Lake
Lake Blackwell
Kaw Lake
Arkansas River
Chikaskia River
South Fork Salt Creek
Salt Fork Arkansas River
Deer Creek
Bear Creek
Indian Creek
Coon Creek
Turkey Creek
Dry Creek
Cedar Creek
Prospect Creek
Longwood Creek
Sage Creek
Hardy Creek
Kaw Creek
Fasking Bay
Kaw City
Kaw Cove
Bear Creek Cove
Ponca Cove
Deer Creek Cove
Kaw Lake Cove
Ponca Cove
Kaw Lake Cove
Kaw Lake Cove
Kaw Lake



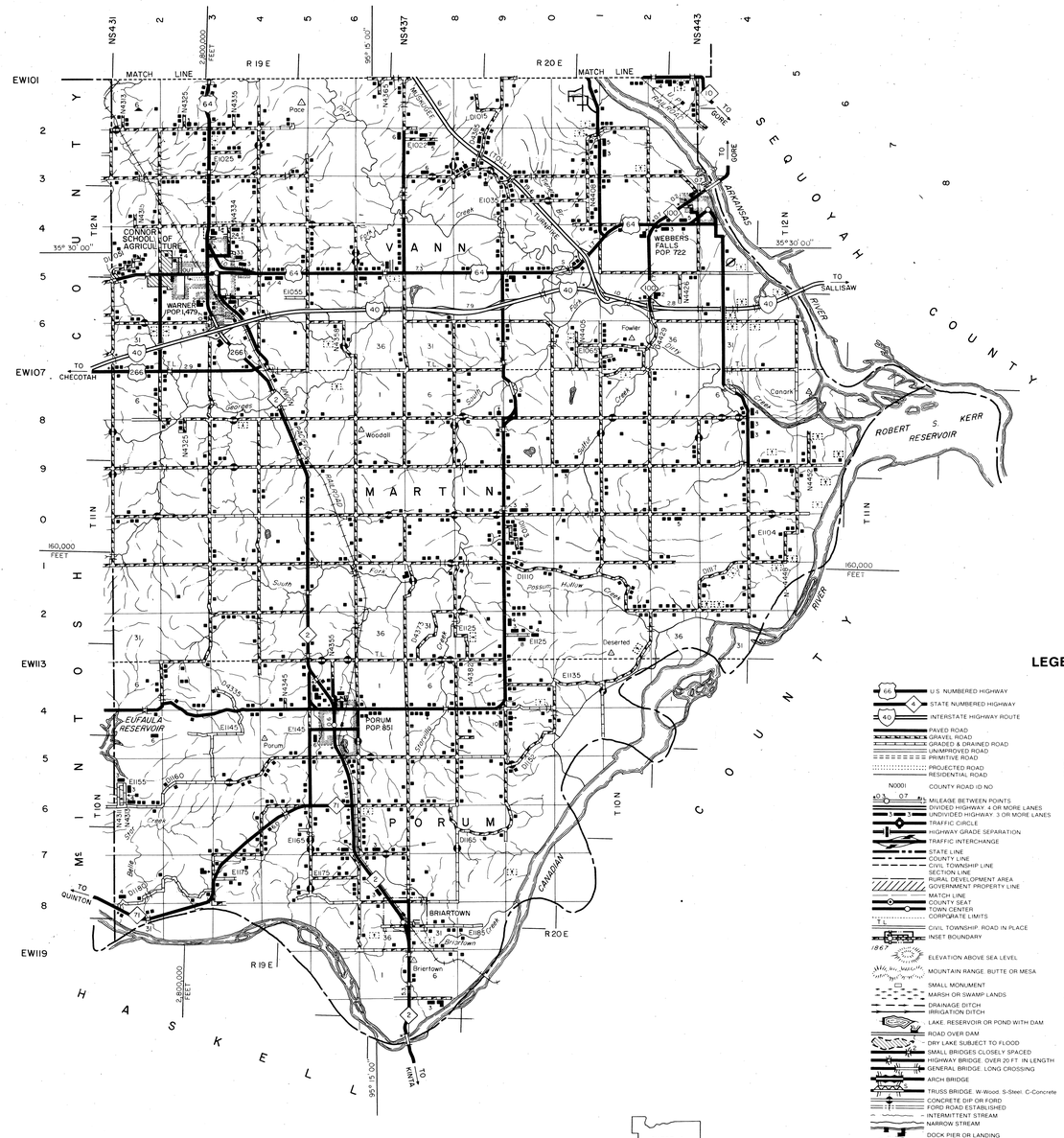
BRAIRTOWN
SEC. 36,31, T10N, R19E
SCALE
0.0 0.1 0.2 0.3 0.4 0.5 MILE
0 1,320' 2,640 FEET



KEEFETON
SEC. 24, T13N, R18E
SCALE
0.0 0.1 0.2 0.3 0.4 0.5 MILE
0 500' 1,320' 2,640 FEET



SUMMIT
SEC. 20,29, T14N, R18E
SCALE
0.0 0.1 0.2 0.3 0.4 0.5 MILE
0 500' 1,320' 2,640 FEET



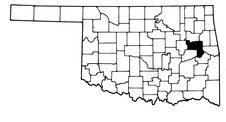
ALL DATA CURRENT TO
DATE OF INVENTORY
OCT. 1985

ORIGINAL DRAFTING BY W.T. DEC 1986
STATE SYSTEM REVISED TO JAN. 1992

LEGEND

- U.S. NUMBERED HIGHWAY
- STATE NUMBERED HIGHWAY
- INTERSTATE HIGHWAY ROUTE
- PAVED ROAD
- GRAVEL ROAD
- GRADED & DRAINED ROAD
- UNIMPROVED ROAD
- PRIMITIVE ROAD
- PROJECTED ROAD
- RESIDENTIAL ROAD
- N0001 COUNTY ROAD ID NO.
- MILEAGE BETWEEN POINTS
- DIVIDED HIGHWAY, 4 OR MORE LANES
- UNDIVIDED HIGHWAY, 3 OR MORE LANES
- TRAFFIC CIRCLE
- HIGHWAY GRADE SEPARATION
- TRAFFIC INTERCHANGE
- STATE LINE
- COUNTY LINE
- CIVIL TOWNSHIP LINE
- SECTION LINE
- RURAL DEVELOPMENT AREA
- GOVERNMENT PROPERTY LINE
- MATCH LINE
- COUNTY SEAT
- TOWN CENTER
- CORPORATE LIMITS
- T.L. CIVIL TOWNSHIP, ROAD IN PLACE
- INSET BOUNDARY
- (1850) ELEVATION ABOVE SEA LEVEL
- MOUNTAIN, RANGE, BUTTE OR MESA
- SMALL MONUMENT
- MARSH OR SWAMP LANDS
- DRAINAGE DITCH
- IRRIGATION DITCH
- LAKE, RESERVOIR OR POND WITH DAM
- ROAD OVER DAM
- DRY LAKE SUBJECT TO FLOOD
- SMALL BRIDGES CLOSELY SPACED
- HIGHWAY BRIDGE, OVER 20 FT. IN LENGTH
- GENERAL BRIDGE, LONG CROSSING
- ARCH BRIDGE
- TRUSS BRIDGE, W-Wood, S-Steel, C-Concrete
- CONCRETE DIP OR FORD
- FORD ROAD ESTABLISHED
- INTERMITTENT STREAM
- NARROW STREAM
- DOCK PIER OR LANDING
- NAVIGABLE STREAM WITH LOCK & DAM
- WIDE STREAM OR RIVER
- TRIANGULATION STATION
- RAILROAD, ANY NUMBER OF TRACKS
- RAILROAD WITH STATIONS INDICATED
- GRADE CROSSING
- UNDERPASS, R.R. ABOVE
- OVERPASS, R.R. BELOW
- RAILROAD ON STREET
- MILITARY AIRFIELD
- AIRPORT WITH COMPLETE FACILITIES
- AIRPORT WITH LIMITED FACILITIES
- LANDING STRIP, PRIVATE FIELD
- AIRPORT, GENERAL OUTLINE OF FIELD
- RUNWAYS SHOWN IN POSITION
- ROADSIDE PARK, Picnic Grounds
- PLAYGROUNDS
- BATHING BEACH OR SWIMMING POOL
- SCENIC SITE
- MOTEL
- CAMP OR LODGE, Permanent With Buildings
- SP SMALL PARK, SP-State, CP-County, MP-Municipal, TP-Trailer Park
- FOREST RANGER STATION
- OBSERVATION OR LOOKOUT TOWER
- CAMP SITE
- FISH HATCHERY
- G GOLF COURSE OR COUNTRY CLUB
- A ATHLETIC FIELD OR AMUSEMENT PARK
- FAIRGROUNDS, RACE COURSE
- DWELLING
- NUMBER OF DWELLINGS CLOSELY SPACED
- COMBINED BUSINESS AND DWELLING
- POST OFFICE
- POST OFFICE COMBINATIONS
- SEASONAL DWELLINGS
- CHURCH OR OTHER RELIGIOUS BUILDING
- CEMETERY
- CHURCH WITH CEMETERY ADJACENT
- REST HOME
- HOSPITAL
- SMALL BUSINESS
- INDUSTRY
- SAW MILL
- MINE SHAFT OR DRIFT
- OIL OR GAS FIELD
- GAUGING OR PUMPING STATION
- WAREHOUSE
- GRAVEL PIT
- QUARRY
- SCHOOL
- COMMUNITY HALL OR LODGE
- DRIVE-IN THEATER
- CORRECTIONAL INSTITUTION
- HIGHWAY GARAGE
- JUNK YARDS & DUMPS, A-Automobile, B-Scrap Building Material, D-Refuse, Garbage or Trash Dump, F-Sanitary Fill, G-Other
- SEWAGE DISPOSAL PLANT
- WATER SUPPLY STAND PIPE
- POWER PLANT
- BOOSTER STATION
- POWER SUBSTATION
- TELEVISION OR RADIO STATION
- MILITARY INSTALLATION

N



GENERAL HIGHWAY MAP
MUSKOGEE COUNTY
OKLAHOMA

PREPARED BY THE
OKLAHOMA DEPARTMENT OF TRANSPORTATION
PLANNING DIVISION

IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

SCALE
0 1 2 3 4 5 MILES

LAMBERT CONFORMAL CONIC PROJECTION U.S COAST & GEODETIC SURVEY DATA
20,000 FOOT GRID, OKLAHOMA PLANE COORDINATE SYSTEM NORTH PROJECTION ZONE
POPULATION FIGURES BASED ON 1990 U.S. CENSUS
CO. POP. 68,078

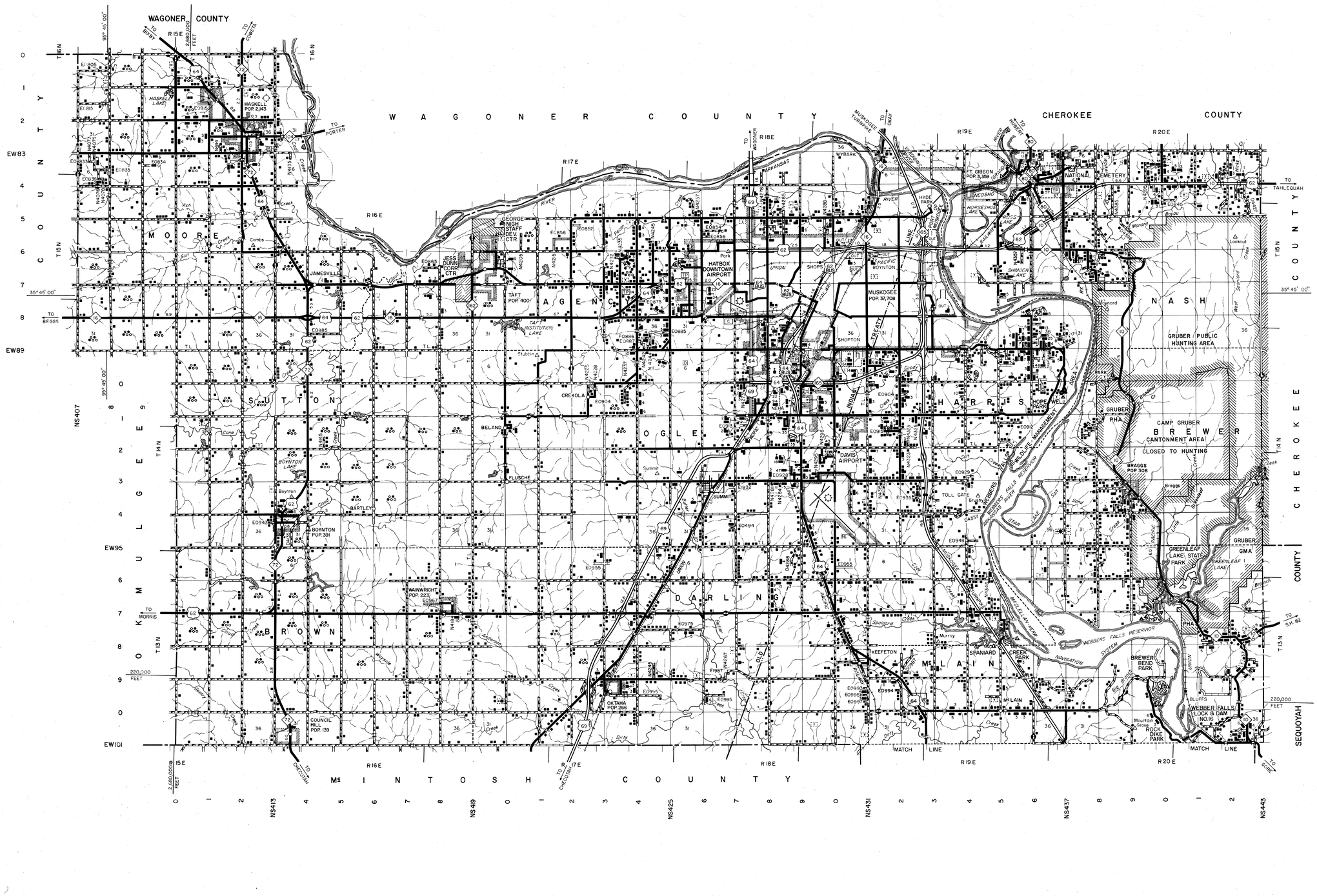
This map indicates those roads known to the Department to be open to public travel. Placement of a road on the map has no relationship to maintenance responsibility by any level of government.

Copies of this map are available for public use at nominal cost.
Address: OKLAHOMA DEPARTMENT OF TRANSPORTATION
REPRODUCTION BRANCH Phone (405) 521-2586
200 N.E. 21 st. STREET
OKLAHOMA CITY, OKLAHOMA 73105

ALL RIGHTS RESERVED

SHEET 1 OF 2 SHEETS

NOT FOR RESALE



This map indicates those roads known to the Department to be open to public travel. Placement of a road on the map has no relationship to maintenance responsibility by any level of government.

Copies of this map are available for public use at nominal cost.

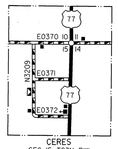
Address: OKLAHOMA DEPARTMENT OF TRANSPORTATION
REPRODUCTION BRANCH Phone (405) 521-2586
200 N.E. 21 st. STREET
OKLAHOMA CITY, OKLAHOMA 73105

ALL RIGHTS RESERVED

SHEET 2 OF 2 SHEETS

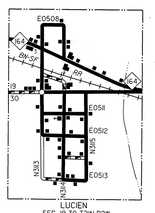
MUSKOGEE CO. NO. 2

NOT FOR RESALE



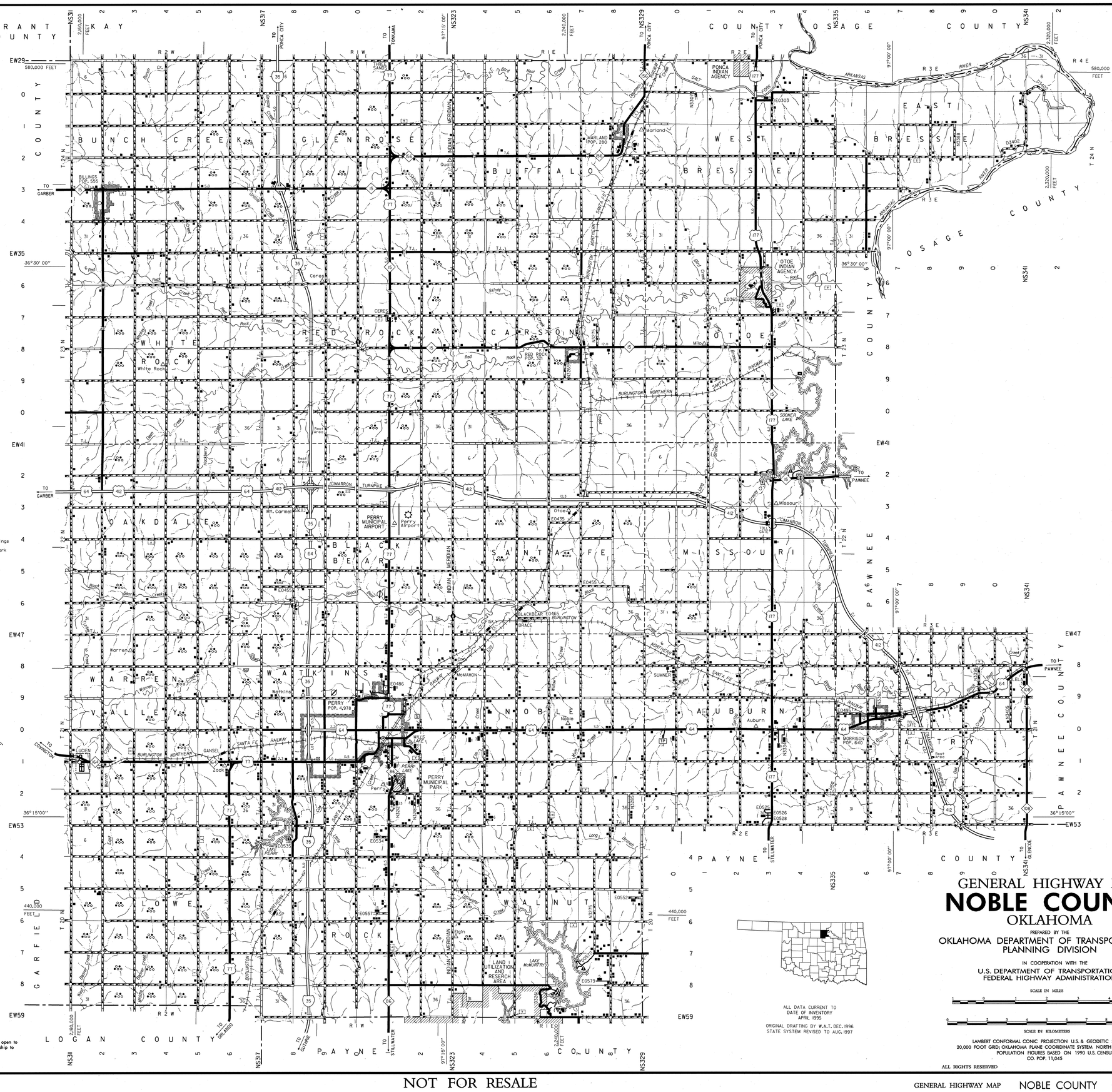
LEGEND

- U.S.NUMBERED HIGHWAY
- STATE NUMBERED HIGHWAY
- INTERSTATE HIGHWAY ROUTE
- PAVED ROAD
- GRAVEL ROAD
- GRADED & DRAINED ROAD
- UNIMPROVED ROAD
- PRIMITIVE ROAD
- PROJECTED ROAD
- RESIDENTIAL ROAD
- N0001 COUNTY ROAD ID NO.
- 0.3 0.7 MILEAGE BETWEEN POINTS
- DIVIDED HIGHWAY, 4 OR MORE LANES
- UNDIVIDED HIGHWAY, 3 OR MORE LANES
- TRAFFIC CIRCLE
- HIGHWAY GRADE SEPARATION
- TRAFFIC INTERCHANGE
- STATE LINE
- COUNTY LINE
- CIVIL TOWNSHIP LINE
- SECTION LINE
- RURAL DEVELOPMENT AREA
- GOVERNMENT PROPERTY LINE
- MATCH LINE
- COUNTY SEAT
- TOWN CENTER
- CORPORATE LIMITS
- T.4N. CIVIL TOWNSHIP, ROAD IN PLACE
- INSET BOUNDARY
- 1867 ELEVATION ABOVE SEA LEVEL
- MOUNTAIN RANGE, BUTTE OR MESA
- SMALL MONUMENT
- MARSH OR SWAMP LANDS
- ORAINAGE DITCH
- IRRIGATION DITCH
- LAKE, RESERVOIR OR POND WITH DAM
- ROAD OVER DAM
- DRY LAKE SUBJECT TO FLOOD
- SMALL BRIDGES CLOSELY SPACED
- HIGHWAY BRIDGE, OVER 20FT. IN LENGTH
- GENERAL BRIDGE, LONG CROSSING
- ARCH BRIDGE
- TRUSS BRIDGE, W-WOOD, S-STEEL, C-CONCRETE
- CONCRETE DIP OR FORD
- FORD ROAD ESTABLISHED
- INTERMITTENT STREAM
- NARROW STREAM
- DOCK PIER OR LANDING
- NAVIGABLE STREAM WITH LOCK & DAM
- WIDE STREAM OR RIVER
- TRIANGULATION STATION
- RAILROAD, ANY NUMBER OF TRACKS
- RAILROAD WITH STATION INDICATED
- GRADE CROSSING
- UNDERPASS, R.R. ABOVE
- OVERPASS, R.R. BELOW
- RAILROAD ON STREET
- MILITARY AIRFIELD
- AIRPORT WITH COMPLETE FACILITIES
- AIRPORT WITH LIMITED FACILITIES
- LANDING STRIP, PRIVATE FIELD
- AIRPORT, GENERAL OUTLINE OF FIELD RUNWAYS SHOWN IN POSITION
- ROADSIDE PARK Picnic Grounds PLAYGROUNDS BATHING BEACH OR SWIMMING POOL
- SCENIC SITE
- MOTEL
- CAMP OR LODGE, Permanent with buildings
- SMALL PARK SP-State, CP-County MP-Municipal, TP-Trailer Park
- FOREST RANGER STATION
- OBSERVATION OR LOOKOUT TOWER
- CAMP SITE
- FISH HATCHERY
- GOLF COURSE OR COUNTRY CLUB
- ATHLETIC FIELD OR AMUSEMENT PARK
- FAIGROUNDS, RACE COURSE
- DWELLING
- NUMBER OF DWELLINGS CLOSLEY SPACED
- COMBINED BUSINESS AND DWELLING
- POST OFFICE
- POST OFFICE COMBINATIONS
- SEASONAL DWELLINGS
- CHURCH OR OTHER RELIGOUS BUILDING
- CEMETERY
- CHURCH WITH CEMETERY ADJACENT
- REST HOME
- HOSPITAL
- SMALL BUSINESS
- INDUSTRY
- SAW MILL
- MINE SHAFT OR DRIFT
- OIL OR GAS FIELD
- GAUGING OR PUMPING STATION
- WAREHOUSE
- GRAVEL PIT
- QUARRY
- SCHOOL
- COMMUNITY HALL OR LODGE
- DRIVE-IN THEATER
- CORRECTIONAL INSTITUTION
- HIGHWAY GARAGE
- JUNK YARDS & DUMPS A-Automobile, B-Scrap Building Material, D-Refuse, Garbage or trash dump, F-Sanitary Fill, G-Other
- SEWAGE DISPOSAL PLANT
- WATER SUPPLY STAND PIPE
- POWER PLANT
- BOOSTER STATION
- POWER SUBSTATION
- TELEVISION OR RADIO STATION
- MILITARY INSTALLATION



Copies of this map are available for public use at nominal cost.
Address:
OKLAHOMA DEPARTMENT OF TRANSPORTATION
REPRODUCTION BRANCH Phone (405) 521-2586
200 N.E. 21st STREET
OKLAHOMA CITY, OKLAHOMA 73105-3204

This map indicates those roads known to the Department to be open to public travel. Placement of a road on the map has no relationship to maintenance responsibility by any level of government.



ALL DATA CURRENT TO
DATE OF INVENTORY
APRIL 1995

ORIGINAL DRAFTING BY W.A.T. DEC. 1996
STATE SYSTEM REVISED TO AUG. 1997

GENERAL HIGHWAY MAP

NOBLE COUNTY

OKLAHOMA

PREPARED BY THE
OKLAHOMA DEPARTMENT OF TRANSPORTATION
PLANNING DIVISION

IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

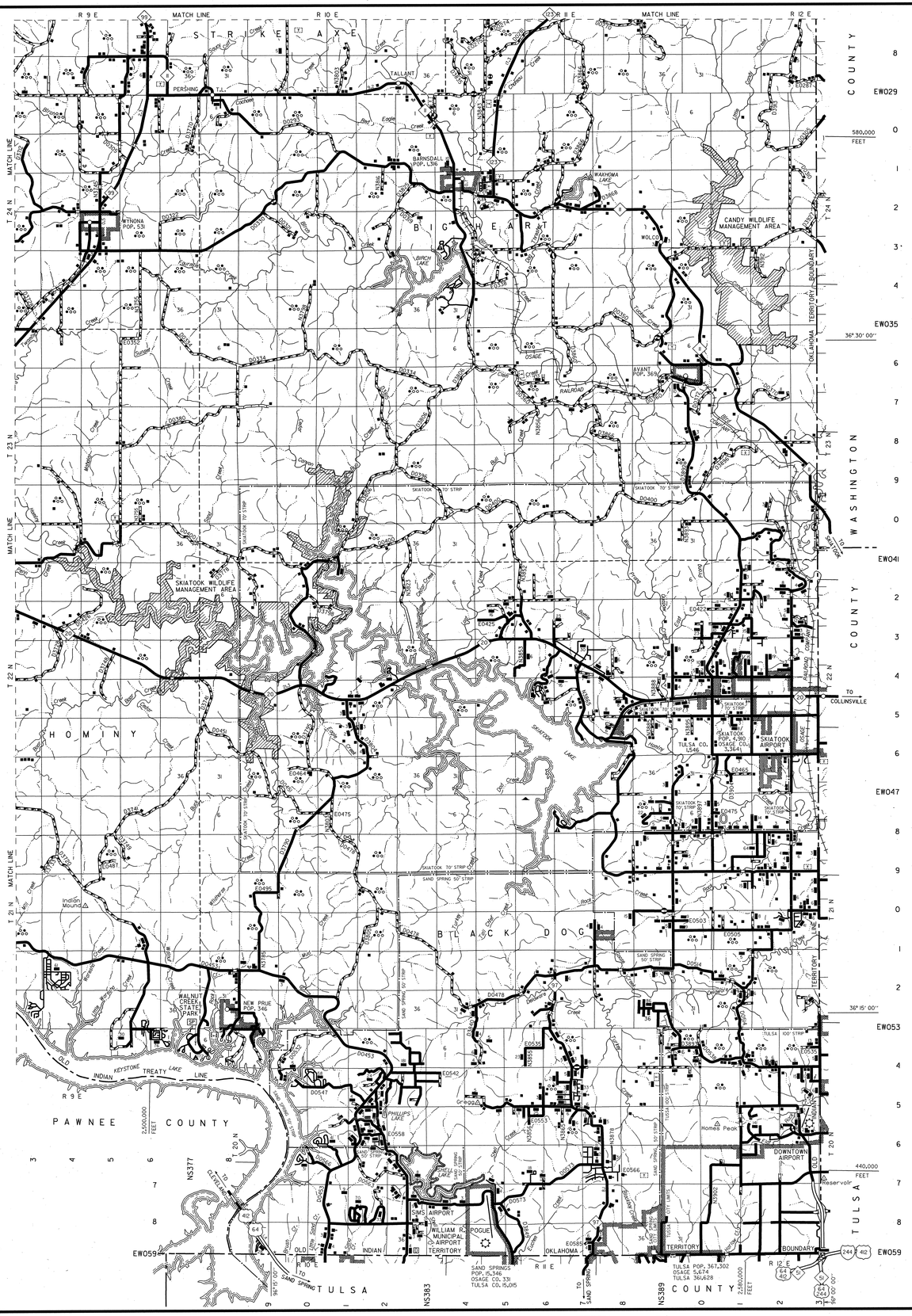
SCALE IN MILES
0 1 2 3 4 5 MILES
0 1 2 3 4 5 6 7 8 9 10 KILOMETERS
SCALE IN KILOMETERS

LAMBERT CONFORMAL CONIC PROJECTION U.S. & GEODETIC SURVEY DATA
20,000 FOOT GRID: OKLAHOMA PLANE COORDINATE SYSTEM NORTH PROJECTION ZONE.
POPULATION FIGURES BASED ON 1990 U.S. CENSUS
CO. POP. 11,045

ALL RIGHTS RESERVED
COMPUTER GENERATED

NOBLE

NOT FOR RESALE



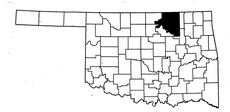
LEGEND

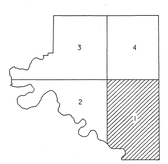
- U.S. NUMBERED HIGHWAY
- STATE NUMBERED HIGHWAY
- INTERSTATE HIGHWAY ROUTE
- PAVED ROAD
- GRAVEL ROAD
- GRADED & DRAINED ROAD
- UNIMPROVED ROAD
- PRIMITIVE ROAD
- PROJECTED ROAD
- RESIDENTIAL ROAD
- N0001 COUNTY ROAD ID NO.
- 0.3 0.7 MILEAGE BETWEEN POINTS
- DIVIDED HIGHWAY, 4 OR MORE LANES
- UNDIVIDED HIGHWAY, 3 OR MORE LANES
- TRAFFIC CIRCLE
- HIGHWAY GRADE SEPARATION
- TRAFFIC INTERCHANGE
- STATE LINE
- COUNTY LINE
- CIVIL TOWNSHIP LINE
- SECTION LINE
- RURAL DEVELOPMENT AREA
- GOVERNMENT PROPERTY LINE
- MATCH LINE
- COUNTY SEAT
- TOWN CENTER
- CORPORATE LIMITS
- T24N CIVIL TOWNSHIP, ROAD IN PLACE
- INSET BOUNDARY
- 1867 ELEVATION ABOVE SEA LEVEL
- MOUNTAIN RANGE, BUTTE OR MESA
- SMALL MONUMENT
- MARSH OR SWAMP LANDS
- DRAINAGE DITCH
- IRRIGATION DITCH
- LAKE, RESERVOIR OR POND WITH DAM
- ROAD OVER DAM
- DRY LAKE SUBJECT TO FLOOD
- SMALL BRIDGES CLOSELY SPACED
- HIGHWAY BRIDGE, OVER 20FT. IN LENGTH
- GENERAL BRIDGE, LONG CROSSING
- ARCH BRIDGE
- TRUSS BRIDGE, W-WOOD, S-STEEL, C-CONCRETE
- CONCRETE DIP OR FORD
- FORD ROAD ESTABLISHED
- INTERMITTENT STREAM
- NARROW STREAM
- DOCK PIER OR LANDING
- NAVIGABLE STREAM WITH LOCK & DAM
- WIDE STREAM OR RIVER
- TRIANGULATION STATION

- RAILROAD, ANY NUMBER OF TRACKS
- RAILROAD WITH STATION INDICATED
- GRADE CROSSING
- UNDERPASS, R.R. ABOVE
- OVERPASS, R.R. BELOW
- RAILROAD ON STREET
- MILITARY AIRFIELD
- AIRPORT WITH COMPLETE FACILITIES
- AIRPORT WITH LIMITED FACILITIES
- LANDING STRIP, PRIVATE FIELD
- AIRPORT, GENERAL OUTLINE OF FIELD
- RUNWAYS SHOWN IN POSITION
- ROADSIDE PARK Picnic Grounds
- PLAYGROUNDS
- BATHING BEACH OR SWIMMING POOL
- SCENIC SITE
- MOTEL
- CAMP OR LODGE, Permanent with buildings
- SMALL PARK SP-State, CP-County MP-Municipal, TP-Trailer Park
- FOREST RANGER STATION
- OBSERVATION OR LOOKOUT TOWER
- CAMP SITE
- FISH HATCHERY
- C GOLF COURSE OR COUNTRY CLUB
- A ATHLETIC FIELD OR AMUSEMENT PARK
- FAIRGROUNDS, RACE COURSE
- DWELLING
- NUMBER OF DWELLINGS CLOSLEY SPACED
- COMBINED BUSINESS AND DWELLING
- POST OFFICE
- POST OFFICE COMBINATIONS
- SEASONAL DWELLINGS
- CHURCH OR OTHER RELIGOUS BUILDING
- CEMETERY
- CHURCH WITH CEMETERY ADJACENT
- REST HOME
- HOSPITAL
- SMALL BUSINESS
- INDUSTRY
- SAW MILL
- MINE SHAFT OR DRIFT
- OIL OR GAS FIELD
- GAUGING OR PUMPING STATION
- WAREHOUSE
- GRAVEL PIT
- QUARRY
- SCHOOL
- COMMUNITY HALL OR LODGE
- DRIVE-IN THEATER
- CORRECTIONAL INSTITUTION
- HIGHWAY GARAGE
- JUNK YARDS & DUMPS A-Automobile, B-Scrap Building Material, D-Refuse, Garbage or trash dump, F-Sanitary Fill, G-Other
- SEWAGE DISPOSAL PLANT
- WATER SUPPLY STAND PIPE
- POWER PLANT
- BOOSTER STATION
- POWER SUBSTATION
- KOMA TELEVISION OR RADIO STATION
- MILITARY INSTALLATION

ALL DATA CURRENT TO
DATE OF INVENTORY
MARCH 1995

ORIGINAL DRAFTING BY W.A.T. MAY 1996
STATE SYSTEM REVISED TO MAY 1996





N

GENERAL HIGHWAY MAP
OSAGE COUNTY
OKLAHOMA

PREPARED BY THE
OKLAHOMA DEPARTMENT OF TRANSPORTATION
PLANNING DIVISION

IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

SCALE
0 0.5 0 1 2 3 4 5 MILES

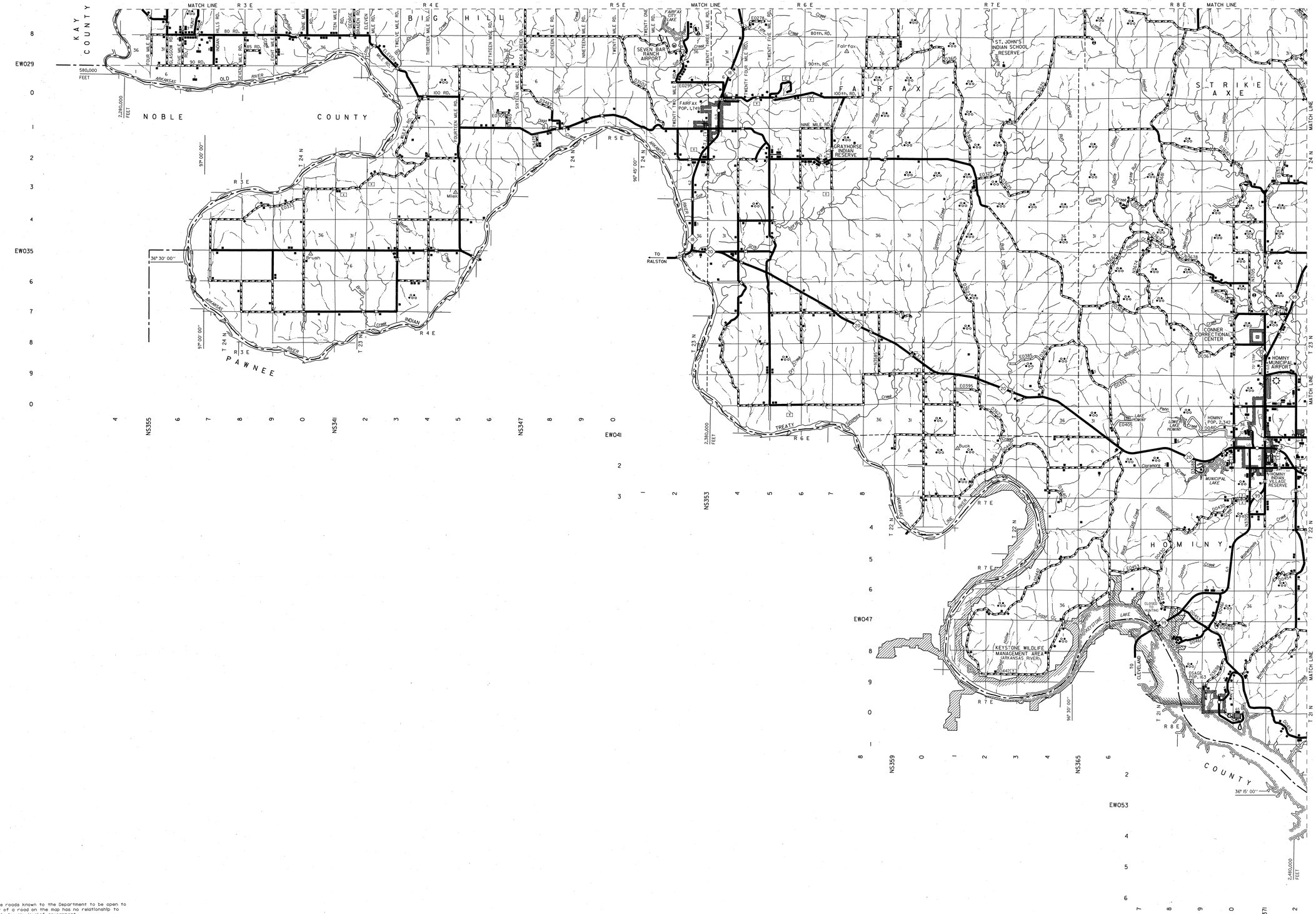
LAMBERT CONFORMAL CONIC PROJECTION U.S.& GEODETIC SURVEY DATA
20,000 FOOT GRIDs OKLAHOMA PLANE COORDINATE SYSTEM NORTH PROJECTION ZONE.
POPULATION FIGURES BASED ON 1990 U.S. CENSUS
CO. POP. 41,645

ALL RIGHTS RESERVED
SHEET 1OF 4 SHEETS
COMPUTER GENERATED

This map indicates those roads known to the Department to be open to public travel. Placement of a road on the map has no relationship to maintenance responsibility by any levelof government.

Copies of this map are available for public use at nominalcost.
Address
OKLAHOMA DEPARTMENT OF TRANSPORTATION
REPRODUCTION BRANCH Phone (405) 521-2586
200 N.E. 21st STREET
OKLAHOMA CITY, OKLAHOMA 73105-3204

NOT FOR RESALE

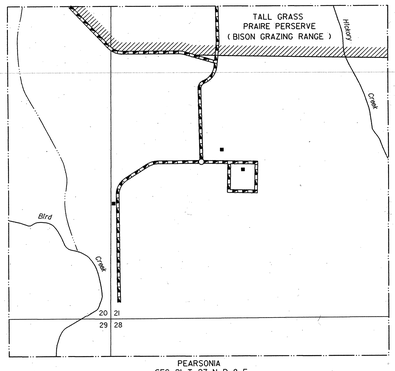


This map indicates those roads known to the Department to be open to public travel. Placement of a road on the map has no relationship to maintenance responsibility by any level of government.

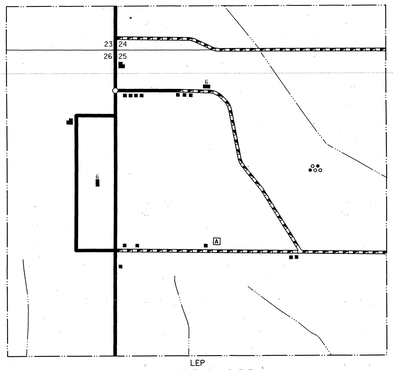
Copies of this map are available for public use at nominal cost.
Address:
OKLAHOMA DEPARTMENT OF TRANSPORTATION
REPRODUCTION BRANCH Phone (405) 521-2586
200 N.E. 21st STREET
OKLAHOMA CITY, OKLAHOMA 73105-3204

ALL RIGHTS RESERVED
SHEET 2 OF 4 SHEETS MARCH 1995 COMPUTER GENERATED

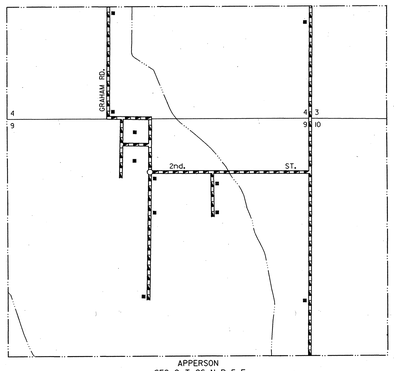
NOT FOR RESALE



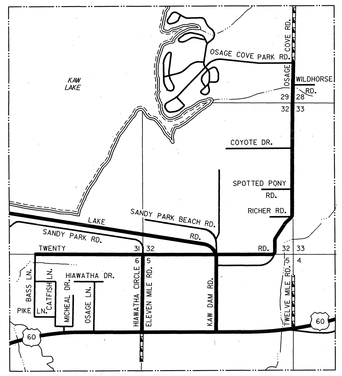
PEARSONIA
SEC. 21, T 27 N, R 8 E



LEP
SEC. 26, 25, T 27 N, R 5 E

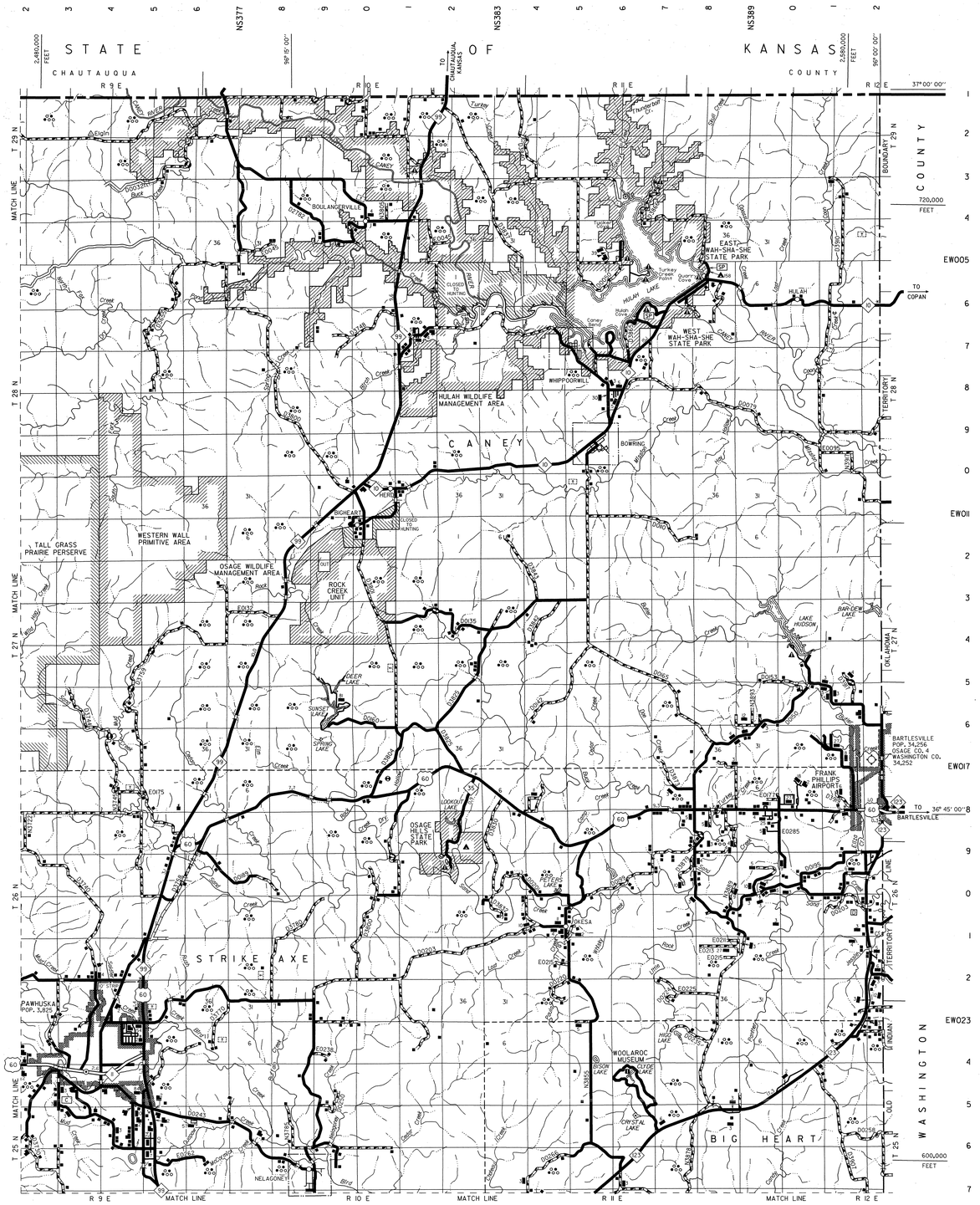


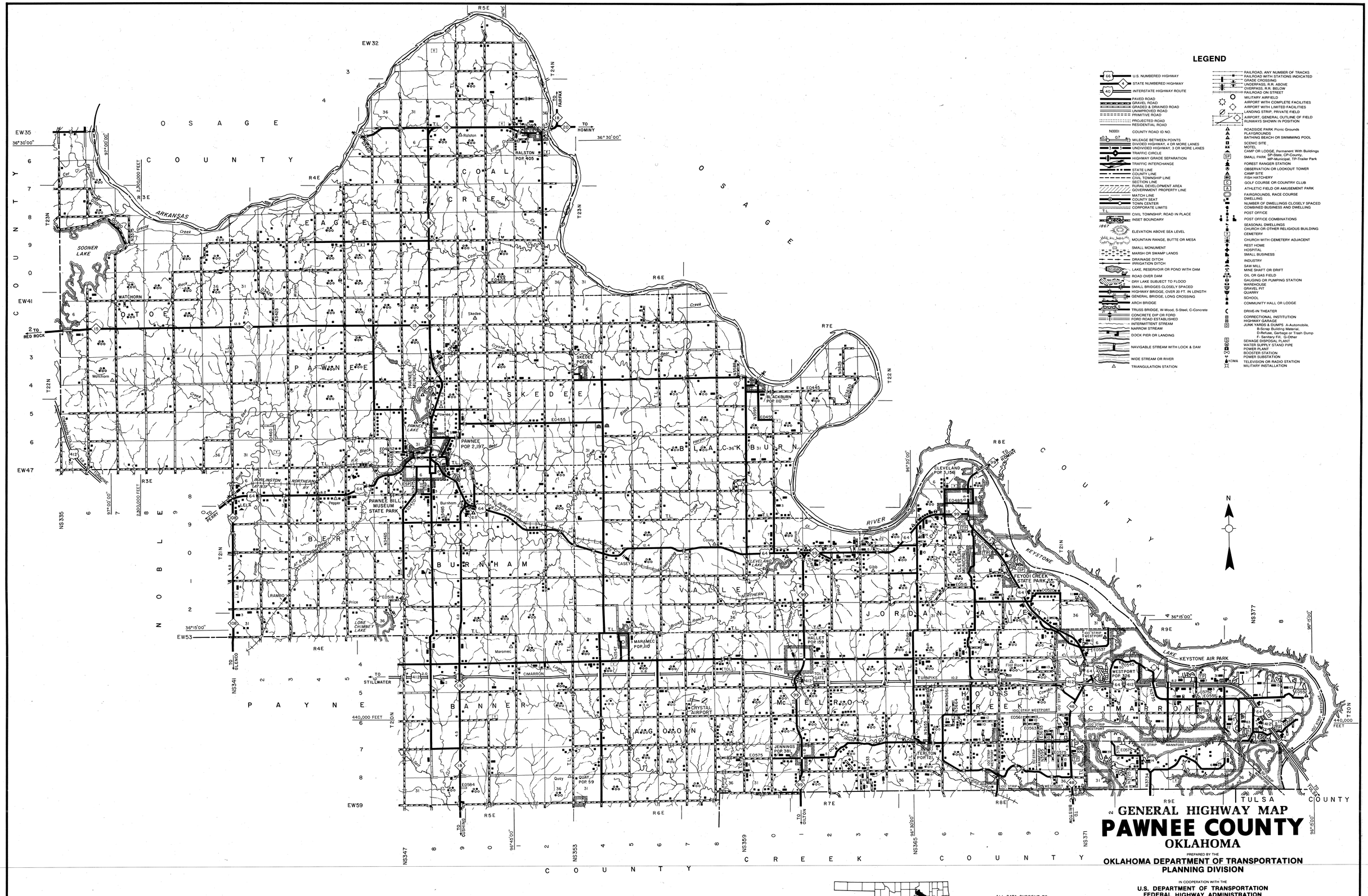
APPERSON
SEC. 9, T 26 N, R 5 E



INSET NO. I

STATE OF KANSAS
COWLEY COUNTY
CHAUTAUQUA COUNTY
NS353
NS359
NS365
NS371
NS341
NS347
NS335
37° 00' 00"
36° 45' 00"
97° 00' 00"
96° 30' 00"
2,360,000 FEET
2,460,000 FEET
2,280,000 FEET
720,000 FEET
6000,000 FEET
R 3 E
R 4 E
R 5 E
R 6 E
R 7 E
R 8 E
T 29 N
T 28 N
T 27 N
T 26 N
T 25 N
EW005
EW011
EW017
EW023
MATCH LINE
TREATY LINE
ADAMS RANCH AIRPORT
ADAMS LAKE
GRAINOLA POP. 58
COOPER RANCH AIRPORT
KAW WILDLIFE MANAGEMENT AREA
FRANTEN LAKE
JOHN DAHL WILDLIFE MANAGEMENT AREA
TALL GRASS PRAIRIE PERSERVE
BISON GRAZING RANGE
WEBB CITY POP. 93
SHIELER POP. 487
McKINNEY AIRPORT
PEARSONIA
BURBANK POP. 165
PHILLIPS LAKE
CARTER NINE
APPERSON
INSET NO. I
PAWHUSKA MUNICIPAL AIRPORT
BLUESTEM LAKE
LITTLE CHIEF
KAY COUNTY
BIG HILL
STRIKE AXE
FAIRFAX
CANEY
ARKANSAS RIVER
KAW LAKE
TO PONCA CITY
TO KAW CITY
TO CEDAR VALE, KANSAS
Evans
Boots
Charley
Burbank
Osage
Webb City
Shieler
Pearsonia
Pawhuska
Lake Pawhuska
Bluestem Lake
Adams Lake
Franten Lake
Phillips Lake
Carter Nine
Lake Bluestem
Kaw Lake
Indian Hills Lake
Lake Sherwin
Lake Kay
Lake Ponca
Lake Ponca Park
Lake Ponca Park Addition
Lake Ponca Park Addition No. 2
Lake Ponca Park Addition No. 3
Lake Ponca Park Addition No. 4
Lake Ponca Park Addition No. 5
Lake Ponca Park Addition No. 6
Lake Ponca Park Addition No. 7
Lake Ponca Park Addition No. 8
Lake Ponca Park Addition No. 9
Lake Ponca Park Addition No. 10
Lake Ponca Park Addition No. 11
Lake Ponca Park Addition No. 12
Lake Ponca Park Addition No. 13
Lake Ponca Park Addition No. 14
Lake Ponca Park Addition No. 15
Lake Ponca Park Addition No. 16
Lake Ponca Park Addition No. 17
Lake Ponca Park Addition No. 18
Lake Ponca Park Addition No. 19
Lake Ponca Park Addition No. 20
Lake Ponca Park Addition No. 21
Lake Ponca Park Addition No. 22
Lake Ponca Park Addition No. 23
Lake Ponca Park Addition No. 24
Lake Ponca Park Addition No. 25
Lake Ponca Park Addition No. 26
Lake Ponca Park Addition No. 27
Lake Ponca Park Addition No. 28
Lake Ponca Park Addition No. 29
Lake Ponca Park Addition No. 30
Lake Ponca Park Addition No. 31
Lake Ponca Park Addition No. 32
Lake Ponca Park Addition No. 33
Lake Ponca Park Addition No. 34
Lake Ponca Park Addition No. 35
Lake Ponca Park Addition No. 36
Lake Ponca Park Addition No. 37
Lake Ponca Park Addition No. 38
Lake Ponca Park Addition No. 39
Lake Ponca Park Addition No. 40
Lake Ponca Park Addition No. 41
Lake Ponca Park Addition No. 42
Lake Ponca Park Addition No. 43
Lake Ponca Park Addition No. 44
Lake Ponca Park Addition No. 45
Lake Ponca Park Addition No. 46
Lake Ponca Park Addition No. 47
Lake Ponca Park Addition No. 48
Lake Ponca Park Addition No. 49
Lake Ponca Park Addition No. 50
Lake Ponca Park Addition No. 51
Lake Ponca Park Addition No. 52
Lake Ponca Park Addition No. 53
Lake Ponca Park Addition No. 54
Lake Ponca Park Addition No. 55
Lake Ponca Park Addition No. 56
Lake Ponca Park Addition No. 57
Lake Ponca Park Addition No. 58
Lake Ponca Park Addition No. 59
Lake Ponca Park Addition No. 60
Lake Ponca Park Addition No. 61
Lake Ponca Park Addition No. 62
Lake Ponca Park Addition No. 63
Lake Ponca Park Addition No. 64
Lake Ponca Park Addition No. 65
Lake Ponca Park Addition No. 66
Lake Ponca Park Addition No. 67
Lake Ponca Park Addition No. 68
Lake Ponca Park Addition No. 69
Lake Ponca Park Addition No. 70
Lake Ponca Park Addition No. 71
Lake Ponca Park Addition No. 72
Lake Ponca Park Addition No. 73
Lake Ponca Park Addition No. 74
Lake Ponca Park Addition No. 75
Lake Ponca Park Addition No. 76
Lake Ponca Park Addition No. 77
Lake Ponca Park Addition No. 78
Lake Ponca Park Addition No. 79
Lake Ponca Park Addition No. 80
Lake Ponca Park Addition No. 81
Lake Ponca Park Addition No. 82
Lake Ponca Park Addition No. 83
Lake Ponca Park Addition No. 84
Lake Ponca Park Addition No. 85
Lake Ponca Park Addition No. 86
Lake Ponca Park Addition No. 87
Lake Ponca Park Addition No. 88
Lake Ponca Park Addition No. 89
Lake Ponca Park Addition No. 90
Lake Ponca Park Addition No. 91
Lake Ponca Park Addition No. 92
Lake Ponca Park Addition No. 93
Lake Ponca Park Addition No. 94
Lake Ponca Park Addition No. 95
Lake Ponca Park Addition No. 96
Lake Ponca Park Addition No. 97
Lake Ponca Park Addition No. 98
Lake Ponca Park Addition No. 99
Lake Ponca Park Addition No. 100
Lake Ponca Park Addition No. 101
Lake Ponca Park Addition No. 102
Lake Ponca Park Addition No. 103
Lake Ponca Park Addition No. 104
Lake Ponca Park Addition No. 105
Lake Ponca Park Addition No. 106
Lake Ponca Park Addition No. 107
Lake Ponca Park Addition No. 108
Lake Ponca Park Addition No. 109
Lake Ponca Park Addition No. 110
Lake Ponca Park Addition No. 111
Lake Ponca Park Addition No. 112
Lake Ponca Park Addition No. 113
Lake Ponca Park Addition No. 114
Lake Ponca Park Addition No. 115
Lake Ponca Park Addition No. 116
Lake Ponca Park Addition No. 117
Lake Ponca Park Addition No. 118
Lake Ponca Park Addition No. 119
Lake Ponca Park Addition No. 120
Lake Ponca Park Addition No. 121
Lake Ponca Park Addition No. 122
Lake Ponca Park Addition No. 123
Lake Ponca Park Addition No. 124
Lake Ponca Park Addition No. 125
Lake Ponca Park Addition No. 126
Lake Ponca Park Addition No. 127
Lake Ponca Park Addition No. 128
Lake Ponca Park Addition No. 129
Lake Ponca Park Addition No. 130
Lake Ponca Park Addition No. 131
Lake Ponca Park Addition No. 132
Lake Ponca Park Addition No. 133
Lake Ponca Park Addition No. 134
Lake Ponca Park Addition No. 135
Lake Ponca Park Addition No. 136
Lake Ponca Park Addition No. 137
Lake Ponca Park Addition No. 138
Lake Ponca Park Addition No. 139
Lake Ponca Park Addition No. 140
Lake Ponca Park Addition No. 141
Lake Ponca Park Addition No. 142
Lake Ponca Park Addition No. 143
Lake Ponca Park Addition No. 144
Lake Ponca Park Addition No. 145
Lake Ponca Park Addition No. 146
Lake Ponca Park Addition No. 147
Lake Ponca Park Addition No. 148
Lake Ponca Park Addition No. 149
Lake Ponca Park Addition No. 150
Lake Ponca Park Addition No. 151
Lake Ponca Park Addition No. 152
Lake Ponca Park Addition No. 153
Lake Ponca Park Addition No. 154
Lake Ponca Park Addition No. 155
Lake Ponca Park Addition No. 156
Lake Ponca Park Addition No. 157
Lake Ponca Park Addition No. 158
Lake Ponca Park Addition No. 159
Lake Ponca Park Addition No. 160
Lake Ponca Park Addition No. 161
Lake Ponca Park Addition No. 162
Lake Ponca Park Addition No. 163
Lake Ponca Park Addition No. 164
Lake Ponca Park Addition No. 165
Lake Ponca Park Addition No. 166
Lake Ponca Park Addition No. 167
Lake Ponca Park Addition No. 168
Lake Ponca Park Addition No. 169
Lake Ponca Park Addition No. 170
Lake Ponca Park Addition No. 171
Lake Ponca Park Addition No. 172
Lake Ponca Park Addition No. 173
Lake Ponca Park Addition No. 174
Lake Ponca Park Addition No. 175
Lake Ponca Park Addition No. 176
Lake Ponca Park Addition No. 177
Lake Ponca Park Addition No. 178
Lake Ponca Park Addition No. 179
Lake Ponca Park Addition No. 180
Lake Ponca Park Addition No. 181
Lake Ponca Park Addition No. 182
Lake Ponca Park Addition No. 183
Lake Ponca Park Addition No. 184
Lake Ponca Park Addition No. 185
Lake Ponca Park Addition No. 186
Lake Ponca Park Addition No. 187
Lake Ponca Park Addition No. 188
Lake Ponca Park Addition No. 189
Lake Ponca Park Addition No. 190
Lake Ponca Park Addition No. 191
Lake Ponca Park Addition No. 192
Lake Ponca Park Addition No. 193
Lake Ponca Park Addition No. 194
Lake Ponca Park Addition No. 195
Lake Ponca Park Addition No. 196
Lake Ponca Park Addition No. 197
Lake Ponca Park Addition No. 198
Lake Ponca Park Addition No. 199
Lake Ponca Park Addition No. 200
Lake Ponca Park Addition No. 201
Lake Ponca Park Addition No. 202
Lake Ponca Park Addition No. 203
Lake Ponca Park Addition No. 204
Lake Ponca Park Addition No. 205
Lake Ponca Park Addition No. 206
Lake Ponca Park Addition No. 207
Lake Ponca Park Addition No. 208
Lake Ponca Park Addition No. 209
Lake Ponca Park Addition No. 210
Lake Ponca Park Addition No. 211
Lake Ponca Park Addition No. 212
Lake Ponca Park Addition No. 213
Lake Ponca Park Addition No. 214
Lake Ponca Park Addition No. 215
Lake Ponca Park Addition No. 216
Lake Ponca Park Addition No. 217
Lake Ponca Park Addition No. 218
Lake Ponca Park Addition No. 219
Lake Ponca Park Addition No. 220
Lake Ponca Park Addition No. 221
Lake Ponca Park Addition No. 222
Lake Ponca Park Addition No. 223
Lake Ponca Park Addition No. 224
Lake Ponca Park Addition No. 225
Lake Ponca Park Addition No. 226
Lake Ponca Park Addition No. 227
Lake Ponca Park Addition No. 228
Lake Ponca Park Addition No. 229
Lake Ponca Park Addition No. 230
Lake Ponca Park Addition No. 231
Lake Ponca Park Addition No. 232
Lake Ponca Park Addition No. 233
Lake Ponca Park Addition No. 234
Lake Ponca Park Addition No. 235
Lake Ponca Park Addition No. 236
Lake Ponca Park Addition No. 237
Lake Ponca Park Addition No. 238
Lake Ponca Park Addition No. 239
Lake Ponca Park Addition No. 240
Lake Ponca Park Addition No. 241
Lake Ponca Park Addition No. 242
Lake Ponca Park Addition No. 243
Lake Ponca Park Addition No. 244
Lake Ponca Park Addition No. 245
Lake Ponca Park Addition No. 246
Lake Ponca Park Addition No. 247
Lake Ponca Park Addition No. 248
Lake Ponca Park Addition No. 249
Lake Ponca Park Addition No. 250
Lake Ponca Park Addition No. 251
Lake Ponca Park Addition No. 252
Lake Ponca Park Addition No. 253
Lake Ponca Park Addition No. 254
Lake Ponca Park Addition No. 255
Lake Ponca Park Addition No. 256
Lake Ponca Park Addition No. 257
Lake Ponca Park Addition No. 258
Lake Ponca Park Addition No. 259
Lake Ponca Park Addition No. 260
Lake Ponca Park Addition No. 261
Lake Ponca Park Addition No. 262
Lake Ponca Park Addition No. 263
Lake Ponca Park Addition No. 264
Lake Ponca Park Addition No. 265
Lake Ponca Park Addition No. 266
Lake Ponca Park Addition No. 267
Lake Ponca Park Addition No. 268
Lake Ponca Park Addition No. 269
Lake Ponca Park Addition No. 270
Lake Ponca Park Addition No. 271
Lake Ponca Park Addition No. 272
Lake Ponca Park Addition No. 273
Lake Ponca Park Addition No. 274
Lake Ponca Park Addition No. 275
Lake Ponca Park Addition No. 276
Lake Ponca Park Addition No. 277
Lake Ponca Park Addition No. 278
Lake Ponca Park Addition No. 279
Lake Ponca Park Addition No. 280
Lake Ponca Park Addition No. 281
Lake Ponca Park Addition No. 282
Lake Ponca Park Addition No. 283
Lake Ponca Park Addition No. 284
Lake Ponca Park Addition No. 285
Lake Ponca Park Addition No. 286
Lake Ponca Park Addition No. 287
Lake Ponca Park Addition No. 288
Lake Ponca Park Addition No. 289
Lake Ponca Park Addition No. 290
Lake Ponca Park Addition No. 291
Lake Ponca Park Addition No. 292
Lake Ponca Park Addition No. 293
Lake Ponca Park Addition No. 294
Lake Ponca Park Addition No. 295
Lake Ponca Park Addition No. 296
Lake Ponca Park Addition No. 297
Lake Ponca Park Addition No. 298
Lake Ponca Park Addition No. 299
Lake Ponca Park Addition No. 300
Lake Ponca Park Addition No. 301
Lake Ponca Park Addition No. 302
Lake Ponca Park Addition No. 303
Lake Ponca Park Addition No. 304
Lake Ponca Park Addition No. 305
Lake Ponca Park Addition No. 306
Lake Ponca Park Addition No. 307
Lake Ponca Park Addition No. 308
Lake Ponca Park Addition No. 309
Lake Ponca Park Addition No. 310
Lake Ponca Park Addition No. 311
Lake Ponca Park Addition No. 312
Lake Ponca Park Addition No. 313
Lake Ponca Park Addition No. 314
Lake Ponca Park Addition No. 315
Lake Ponca Park Addition No. 316
Lake Ponca Park Addition No. 317
Lake Ponca Park Addition No. 318
Lake Ponca Park Addition No. 319
Lake Ponca Park Addition No. 320
Lake Ponca Park Addition No. 321
Lake Ponca Park Addition No. 322
Lake Ponca Park Addition No. 323
Lake Ponca Park Addition No. 324
Lake Ponca Park Addition No. 325
Lake Ponca Park Addition No. 326
Lake Ponca Park Addition No. 327
Lake Ponca Park Addition No. 328
Lake Ponca Park Addition No. 329
Lake Ponca Park Addition No. 330
Lake Ponca Park Addition No. 331
Lake Ponca Park Addition No. 332
Lake Ponca Park Addition No. 333
Lake Ponca Park Addition No. 334
Lake Ponca Park Addition No. 335
Lake Ponca Park Addition No. 336
Lake Ponca Park Addition No. 337
Lake Ponca Park Addition No. 338
Lake Ponca Park Addition No. 339
Lake Ponca Park Addition No. 340
Lake Ponca Park Addition No. 341
Lake Ponca Park Addition No. 342
Lake Ponca Park Addition No. 343
Lake Ponca Park Addition No. 344
Lake Ponca Park Addition No. 345
Lake Ponca Park Addition No. 346
Lake Ponca Park Addition No. 347
Lake Ponca Park Addition No. 348
Lake Ponca Park Addition No. 349
Lake Ponca Park Addition No. 350
Lake Ponca Park Addition No. 351
Lake Ponca Park Addition No. 352
Lake Ponca Park Addition No. 353
Lake Ponca Park Addition No. 354
Lake Ponca Park Addition No. 355
Lake Ponca Park Addition No. 356
Lake Ponca Park Addition No. 357
Lake Ponca Park Addition No. 358
Lake Ponca Park Addition No. 359
Lake Ponca Park Addition No. 360
Lake Ponca Park Addition No. 361
Lake Ponca Park Addition No. 362
Lake Ponca Park Addition No. 363
Lake Ponca Park Addition No. 364
Lake Ponca Park Addition No. 365
Lake Ponca Park Addition No. 366
Lake Ponca Park Addition No. 367
Lake Ponca Park Addition No. 368
Lake Ponca Park Addition No. 369
Lake Ponca Park Addition No. 370
Lake Ponca Park Addition No. 371
Lake Ponca Park Addition No. 372
Lake Ponca Park Addition No. 373
Lake Ponca Park Addition No. 374
Lake Ponca Park Addition No. 375
Lake Ponca Park Addition No. 376
Lake Ponca Park Addition No. 377
Lake Ponca Park Addition No. 378
Lake Ponca Park Addition No. 379
Lake Ponca Park Addition No. 380
Lake Ponca Park Addition No. 381
Lake Ponca Park Addition No. 382
Lake Ponca Park Addition No. 383
Lake Ponca Park Addition No. 384
Lake Ponca Park Addition No. 385
Lake Ponca Park Addition No. 386
Lake Ponca Park Addition No. 387
Lake Ponca Park Addition No. 388
Lake Ponca Park Addition No. 389
Lake Ponca Park Addition No. 390
Lake Ponca Park Addition No. 391
Lake Ponca Park Addition No. 392
Lake Ponca Park Addition No. 393
Lake Ponca Park Addition No. 394
Lake Ponca Park Addition No. 395
Lake Ponca Park Addition No. 396
Lake Ponca Park Addition No. 397
Lake Ponca Park Addition No. 398
Lake Ponca Park Addition No. 399
Lake Ponca Park Addition No. 400
Lake Ponca Park Addition No. 401
Lake Ponca Park Addition No. 402
Lake Ponca Park Addition No. 403
Lake Ponca Park Addition No. 404
Lake Ponca Park Addition No. 405
Lake Ponca Park Addition No. 406
Lake Ponca Park Addition No. 407
Lake Ponca Park Addition No. 408
Lake Ponca Park Addition No. 409
Lake Ponca Park Addition No. 410
Lake Ponca Park Addition No. 411
Lake Ponca Park Addition No. 412
Lake Ponca Park Addition No. 413
Lake Ponca Park Addition No. 414
Lake Ponca Park Addition No. 415
Lake Ponca Park Addition No. 416
Lake Ponca Park Addition No. 417
Lake Ponca Park Addition No. 418
Lake Ponca Park Addition No. 419
Lake Ponca Park Addition No. 420
Lake Ponca Park Addition No. 421
Lake Ponca Park Addition No. 422
Lake Ponca Park Addition No. 423
Lake Ponca Park Addition No. 424
Lake Ponca Park Addition No. 425
Lake Ponca Park Addition No. 426
Lake Ponca Park Addition No. 427
Lake Ponca Park Addition No. 428
Lake Ponca Park Addition No. 429
Lake Ponca Park Addition No. 430
Lake Ponca Park Addition No. 431
Lake Ponca Park Addition No. 432
Lake Ponca Park Addition No. 433
Lake Ponca Park Addition No. 434
Lake Ponca Park Addition No. 435
Lake Ponca Park Addition No. 436
Lake Ponca Park Addition No. 437
Lake Ponca Park Addition No. 438
Lake Ponca Park Addition No. 439
Lake Ponca Park Addition No. 440
Lake Ponca Park Addition No. 441
Lake Ponca Park Addition No. 442
Lake Ponca Park Addition No. 443
Lake Ponca Park Addition No. 444
Lake Ponca Park Addition No. 445
Lake Ponca Park Addition No. 446
Lake Ponca Park Addition No. 447
Lake Ponca Park Addition No. 448
Lake Ponca Park Addition No. 449
Lake Ponca Park Addition No. 450
Lake Ponca Park Addition No. 451
Lake Ponca Park Addition No. 452
Lake Ponca Park Addition No. 453
Lake Ponca Park Addition No. 454
Lake Ponca Park Addition No. 455
Lake Ponca Park Addition No. 456
Lake Ponca Park Addition No. 457
Lake Ponca Park Addition No. 458
Lake Ponca Park Addition No. 459
Lake Ponca Park Addition No. 460
Lake Ponca Park Addition No. 461
Lake Ponca Park Addition No. 462
Lake Ponca Park Addition No. 463
Lake Ponca Park Addition No. 464
Lake Ponca Park Addition No. 465
Lake Ponca Park Addition No. 466
Lake Ponca Park Addition No. 467
Lake Ponca Park Addition No. 468
Lake Ponca Park Addition No. 469
Lake Ponca Park Addition No. 470
Lake Ponca Park Addition No. 471
Lake Ponca Park Addition No. 472
Lake Ponca Park Addition No. 473
Lake Ponca Park Addition No. 474
Lake Ponca Park Addition No. 475
Lake Ponca Park Addition No. 476
Lake Ponca Park Addition No. 477
Lake Ponca Park Addition No. 478
Lake Ponca Park Addition No. 479
Lake Ponca Park Addition No. 480
Lake Ponca Park Addition No. 481
Lake Ponca Park Addition No. 482
Lake Ponca Park Addition No. 483
Lake Ponca Park Addition No. 484
Lake Ponca Park Addition No. 485
Lake Ponca Park Addition No. 486
Lake Ponca Park Addition No. 487
Lake Ponca Park Addition No. 488
Lake Ponca Park Addition No. 489
Lake Ponca Park Addition No. 490
Lake Ponca Park Addition No. 491
Lake Ponca Park Addition No. 492
Lake Ponca Park Addition No. 493
Lake Ponca Park Addition No. 494
Lake Ponca Park Addition No. 495
Lake Ponca Park Addition No. 496
Lake Ponca Park Addition No. 497
Lake Ponca Park Addition No. 498
Lake Ponca Park Addition No. 499
Lake Ponca Park Addition No. 500
Lake Ponca Park Addition No. 501
Lake Ponca Park Addition No. 502
Lake Ponca Park Addition No. 503
Lake Ponca Park Addition No. 504
Lake Ponca Park Addition No. 505
Lake Ponca Park Addition No. 506
Lake Ponca Park Addition No. 507
Lake Ponca Park Addition No. 508
Lake Ponca Park Addition No. 509
Lake Ponca Park Addition No. 510
Lake Ponca Park Addition No. 511
Lake Ponca Park Addition No. 512
Lake Ponca Park Addition No. 513
Lake Ponca Park Addition No. 514
Lake Ponca Park Addition No. 515
Lake Ponca Park Addition No. 516
Lake Ponca Park Addition No. 517
Lake Ponca Park Addition No. 518
Lake Ponca Park Addition No. 519
Lake Ponca Park Addition No. 520
Lake Ponca Park Addition No. 521
Lake Ponca Park Addition No. 522
Lake Ponca Park Addition No. 523
Lake Ponca Park Addition No. 524
Lake Ponca Park Addition No. 525
Lake Ponca Park Addition No. 526
Lake Ponca Park Addition No. 527
Lake Ponca Park Addition No. 528
Lake Ponca Park Addition No. 529
Lake Ponca Park Addition No. 530
Lake Ponca Park Addition No. 531
Lake Ponca Park Addition No. 532
Lake Ponca Park Addition No. 533
Lake Ponca Park Addition No. 534
Lake Ponca Park Addition No. 535
Lake Ponca Park Addition No. 536
Lake Ponca Park Addition No. 537
Lake Ponca Park Addition No. 538
Lake Ponca Park Addition No. 539
Lake Ponca Park Addition No. 540
Lake Ponca Park Addition No. 541
Lake Ponca Park Addition No. 542
Lake Ponca Park Addition No. 543
Lake Ponca Park Addition No. 544
Lake Ponca Park Addition No. 545
Lake Ponca Park Addition No. 546
Lake Ponca Park Addition No. 547
Lake Ponca Park Addition No. 548
Lake Ponca Park Addition No. 549
Lake Ponca Park Addition No. 550
Lake Ponca Park Addition No. 551
Lake Ponca Park Addition No. 552
Lake Ponca Park Addition No. 553
Lake Ponca Park Addition No. 554
Lake Ponca Park Addition No. 555
Lake Ponca Park Addition No. 556
Lake Ponca Park Addition No. 557
Lake Ponca Park Addition No. 558
Lake Ponca Park Addition No. 559
Lake Ponca Park Addition No. 560
Lake Ponca Park Addition No. 561
Lake Ponca Park Addition No. 562
Lake Ponca Park Addition No. 563
Lake Ponca Park Addition No. 564
Lake Ponca Park Addition No. 565
Lake Ponca Park Addition No. 566
Lake Ponca Park Addition No. 567
Lake Ponca Park Addition No. 568
Lake Ponca Park Addition No. 569
Lake Ponca Park Addition No. 570
Lake Ponca Park Addition No. 571
Lake Ponca Park Addition No. 572
Lake Ponca Park Addition No. 573
Lake Ponca Park Addition No. 574
Lake Ponca Park Addition No. 575
Lake Ponca Park Addition No. 576
Lake Ponca Park Addition No. 577
Lake Ponca Park Addition No. 578
Lake Ponca Park Addition No. 579
Lake Ponca Park Addition No. 580
Lake Ponca Park Addition No. 581
Lake Ponca Park Addition No. 582
Lake Ponca Park Addition No. 583
Lake Ponca Park Addition No. 584
Lake Ponca Park Addition No. 585
Lake Ponca Park Addition No. 586
Lake Ponca Park Addition No. 587
Lake Ponca Park Addition No. 588
Lake Ponca Park Addition No. 589
Lake Ponca Park Addition No. 590
Lake Ponca Park Addition No. 591
Lake Ponca Park Addition No. 592
Lake Ponca Park Addition No. 593
Lake Ponca Park Addition No. 594
Lake Ponca Park Addition No. 595
Lake Ponca Park Addition No. 596
Lake Ponca Park Addition No. 597
Lake Ponca Park Addition No. 598
Lake Ponca Park Addition No. 599
Lake Ponca Park Addition No. 600
Lake Ponca Park Addition No. 601
Lake Ponca Park Addition No. 602
Lake Ponca Park Addition No. 603
Lake Ponca Park Addition No. 604
Lake Ponca Park Addition No. 605
Lake Ponca Park Addition No. 606
Lake Ponca Park Addition No. 607
Lake Ponca Park Addition No. 608
Lake Ponca Park Addition No. 609
Lake Ponca Park Addition No. 610
Lake Ponca Park Addition No. 611
Lake Ponca Park Addition No. 612
Lake Ponca Park Addition No. 613
Lake Ponca Park Addition No. 614
Lake Ponca Park Addition No. 615
Lake Ponca Park Addition No. 616
Lake Ponca Park Addition No. 617
Lake Ponca Park Addition No. 618
Lake Ponca Park Addition No. 619
Lake Ponca Park Addition No. 620
Lake Ponca Park Addition No. 621
Lake Ponca Park Addition No. 622
Lake Ponca Park Addition No. 623
Lake Ponca Park Addition No. 624
Lake Ponca Park Addition No. 625
Lake Ponca Park Addition No. 626
Lake Ponca Park Addition No. 627
Lake Ponca Park Addition No. 628
Lake Ponca Park Addition No. 629
Lake Ponca Park Addition No. 630
Lake Ponca Park Addition No. 631
Lake Ponca Park Addition No. 632
Lake Ponca Park Addition No. 633
Lake Ponca Park Addition No. 634
Lake Ponca Park Addition No. 635
Lake Ponca Park Addition No. 636
Lake Ponca Park Addition No. 637
Lake Ponca Park Addition No. 638
Lake Ponca Park Addition No. 639
Lake Ponca Park Addition No. 640
Lake Ponca Park Addition No. 641
Lake Ponca Park Addition No. 642
Lake Ponca Park Addition No. 643
Lake Ponca Park Addition No. 644
Lake Ponca Park Addition No. 645
Lake Ponca Park Addition No. 646
Lake Ponca Park Addition No. 647
Lake Ponca Park Addition No. 648
Lake Ponca Park Addition No. 649
Lake Ponca Park Addition No. 650
Lake Ponca Park Addition No. 651
Lake Ponca Park Addition No. 652
Lake Ponca Park Addition No. 653
Lake Ponca Park Addition No. 654
Lake Ponca Park Addition No. 655
Lake Ponca Park Addition No. 656
Lake Ponca Park Addition No. 657
Lake Ponca Park Addition No. 658
Lake Ponca Park Addition No. 659
Lake Ponca Park Addition No. 660
Lake Ponca Park Addition No. 661
Lake Ponca Park Addition No. 662
Lake Ponca Park Addition No. 663
Lake Ponca Park Addition No. 664
Lake Ponca Park Addition No. 665
Lake Ponca Park Addition No. 666
Lake Ponca Park Addition No. 667
Lake Ponca Park Addition No. 668
Lake Ponca Park Addition No. 669
Lake Ponca Park Addition No. 670
Lake Ponca Park Addition No. 671
Lake Ponca Park Addition No. 672
Lake Ponca Park Addition No. 673
Lake Ponca Park Addition No. 674
Lake Ponca Park Addition No. 675
Lake Ponca Park Addition No. 676
Lake Ponca Park Addition No. 677
Lake Ponca Park Addition No. 678
Lake Ponca Park Addition No. 679
Lake Ponca Park Addition No. 680
Lake Ponca Park Addition No. 681
Lake Ponca Park Addition No. 682
Lake Ponca Park Addition No. 683
Lake Ponca Park Addition No. 684
Lake Ponca Park Addition No. 685
Lake Ponca Park Addition No. 686
Lake Ponca Park Addition No. 687
Lake Ponca Park Addition No. 688
Lake Ponca Park Addition No. 689
Lake Ponca Park Addition No. 690
Lake Ponca Park Addition No. 691
Lake Ponca Park Addition No. 692
Lake Ponca Park Addition No. 693
Lake Ponca Park Addition No. 694
Lake Ponca Park Addition No. 695
Lake Ponca Park Addition No. 696
Lake Ponca Park Addition No. 697
Lake Ponca Park Addition No. 698
Lake Ponca Park Addition No. 699
Lake Ponca Park Addition No. 700
Lake Ponca Park Addition No. 701
Lake Ponca Park Addition No. 702
Lake Ponca Park Addition No. 703
Lake Ponca Park Addition No. 704
Lake Ponca Park Addition No. 705
Lake Ponca Park Addition No. 706
Lake Ponca Park Addition No. 707
Lake Ponca Park Addition No. 708
Lake Ponca Park Addition No. 709
Lake Ponca Park Addition No. 710
Lake Ponca Park Addition No. 711
Lake Ponca Park Addition No. 712
Lake Ponca Park Addition No. 713
Lake Ponca Park Addition No. 714
Lake Ponca Park Addition No. 715
Lake Ponca Park Addition No. 716
Lake Ponca Park Addition No. 717
Lake Ponca Park Addition No. 718
Lake Ponca Park Addition No. 719
Lake Ponca Park Addition No. 720
Lake Ponca Park Addition No. 721
Lake Ponca Park Addition No. 722
Lake Ponca Park Addition No. 723
Lake Ponca Park Addition No. 724
Lake Ponca Park Addition No. 725
Lake Ponca Park Addition No. 726
Lake Ponca Park Addition No. 727
Lake Ponca Park Addition No. 728
Lake Ponca Park Addition No. 729
Lake Ponca Park Addition No. 730
Lake Ponca Park Addition No. 731
Lake Ponca Park Addition No. 732
Lake Ponca Park Addition No. 733
Lake Ponca Park Addition No. 734
Lake Ponca Park Addition No. 735
Lake Ponca Park Addition No. 736
Lake Ponca Park Addition No. 737
Lake Ponca Park Addition No. 738
Lake Ponca Park Addition No. 739
Lake Ponca Park Addition No. 740
Lake Ponca Park Addition No. 741
Lake Ponca Park Addition No. 742
Lake Ponca Park Addition No. 743
Lake Ponca Park Addition No. 744
Lake Ponca Park Addition No. 745
Lake Ponca Park Addition No. 746
Lake Ponca Park Addition No. 747
Lake Ponca Park Addition No. 748
Lake Ponca Park Addition No. 749
Lake Ponca Park Addition No. 750
Lake Ponca Park Addition No. 751
Lake Ponca Park Addition No. 752
Lake Ponca Park Addition No. 753
Lake Ponca Park Addition No. 754
Lake Ponca Park Addition No. 755
Lake Ponca Park Addition No. 756
Lake Ponca Park Addition No. 757
Lake Ponca Park Addition No. 758
Lake Ponca Park Addition No. 759
Lake Ponca Park Addition No. 760
Lake Ponca Park Addition No. 761
Lake Ponca Park Addition No. 762
Lake Ponca Park Addition No. 763
Lake Ponca Park Addition No. 764
Lake Ponca Park Addition No. 765
Lake Ponca Park Addition No. 766
Lake Ponca Park Addition No. 767
Lake Ponca Park Addition No. 768
Lake Ponca Park Addition No. 769
Lake Ponca Park Addition No. 770
Lake Ponca Park Addition No. 771
Lake Ponca Park Addition No. 772
Lake Ponca Park Addition No. 773
Lake Ponca Park Addition No. 774
Lake Ponca Park Addition No. 775
Lake Ponca Park Addition No. 776
Lake Ponca Park Addition No. 777
Lake Ponca Park Addition No. 778
Lake Ponca Park Addition No. 779
Lake Ponca Park Addition No. 780
Lake Ponca Park Addition No. 781
Lake Ponca Park Addition No. 782
Lake Ponca Park Addition No. 783
Lake Ponca Park Addition No. 784
Lake Ponca Park Addition No. 785
Lake Ponca Park Addition No. 786
Lake Ponca Park Addition No. 787
Lake Ponca Park Addition No. 788
Lake Ponca Park Addition No. 789
Lake Ponca Park Addition No. 790
Lake Ponca Park Addition No. 791
Lake Ponca Park Addition No. 792
Lake Ponca Park Addition No. 793
Lake Ponca Park Addition No. 794
Lake Ponca Park Addition No. 795
Lake Ponca Park Addition No. 796
Lake Ponca Park Addition No. 797
Lake Ponca Park Addition No. 798
Lake Ponca Park Addition No. 799
Lake Ponca Park Addition No. 800
Lake Ponca Park Addition No. 801
Lake Ponca Park Addition No. 802
Lake Ponca Park Addition No. 803
Lake Ponca Park Addition No. 804
Lake Ponca Park Addition No. 805
Lake Ponca Park Addition No. 806
Lake Ponca Park Addition No. 807
Lake Ponca Park Addition No. 808
Lake Ponca Park Addition No. 809
Lake Ponca Park Addition No. 810
Lake Ponca Park Addition No. 811
Lake Ponca Park Addition No. 812
Lake Ponca Park Addition No. 813
Lake Ponca Park Addition No. 814
Lake Ponca Park Addition No. 815
Lake Ponca Park Addition No. 816
Lake Ponca Park Addition No. 817
Lake Ponca Park Addition No. 818
Lake Ponca Park Addition No. 819
Lake Ponca Park Addition No. 820
Lake Ponca Park Addition No. 821
Lake Ponca Park Addition No. 822
Lake Ponca Park Addition No. 823
Lake Ponca Park Addition No. 824
Lake Ponca Park Addition No. 825
Lake Ponca Park Addition No. 826
Lake Ponca Park Addition No. 827
Lake Ponca Park Addition No. 828
Lake Ponca Park Addition No. 829
Lake Ponca Park Addition No. 830
Lake Ponca Park Addition No. 831
Lake Ponca Park Addition No. 832
Lake Ponca Park Addition No. 833
Lake Ponca Park Addition No. 834
Lake Ponca Park Addition No. 835
Lake Ponca Park Addition No. 836
Lake Ponca Park Addition No. 837
Lake Ponca Park Addition No. 838
Lake Ponca Park Addition No. 839
Lake Ponca Park Addition No. 840
Lake Ponca Park Addition No. 841
Lake Ponca Park Addition No. 842
Lake Ponca Park Addition No. 843
Lake Ponca Park Addition No. 844
Lake Ponca Park Addition No. 845
Lake Ponca Park Addition No. 846
Lake Ponca Park Addition No. 847
Lake Ponca Park Addition No. 848
Lake Ponca Park Addition No. 849
Lake Ponca Park Addition No. 850
Lake Ponca Park Addition No. 851
Lake Ponca Park Addition No. 852
Lake Ponca Park Addition No. 853
Lake Ponca Park Addition No. 854
Lake Ponca Park Addition No. 855
Lake Ponca Park Addition No. 856
L

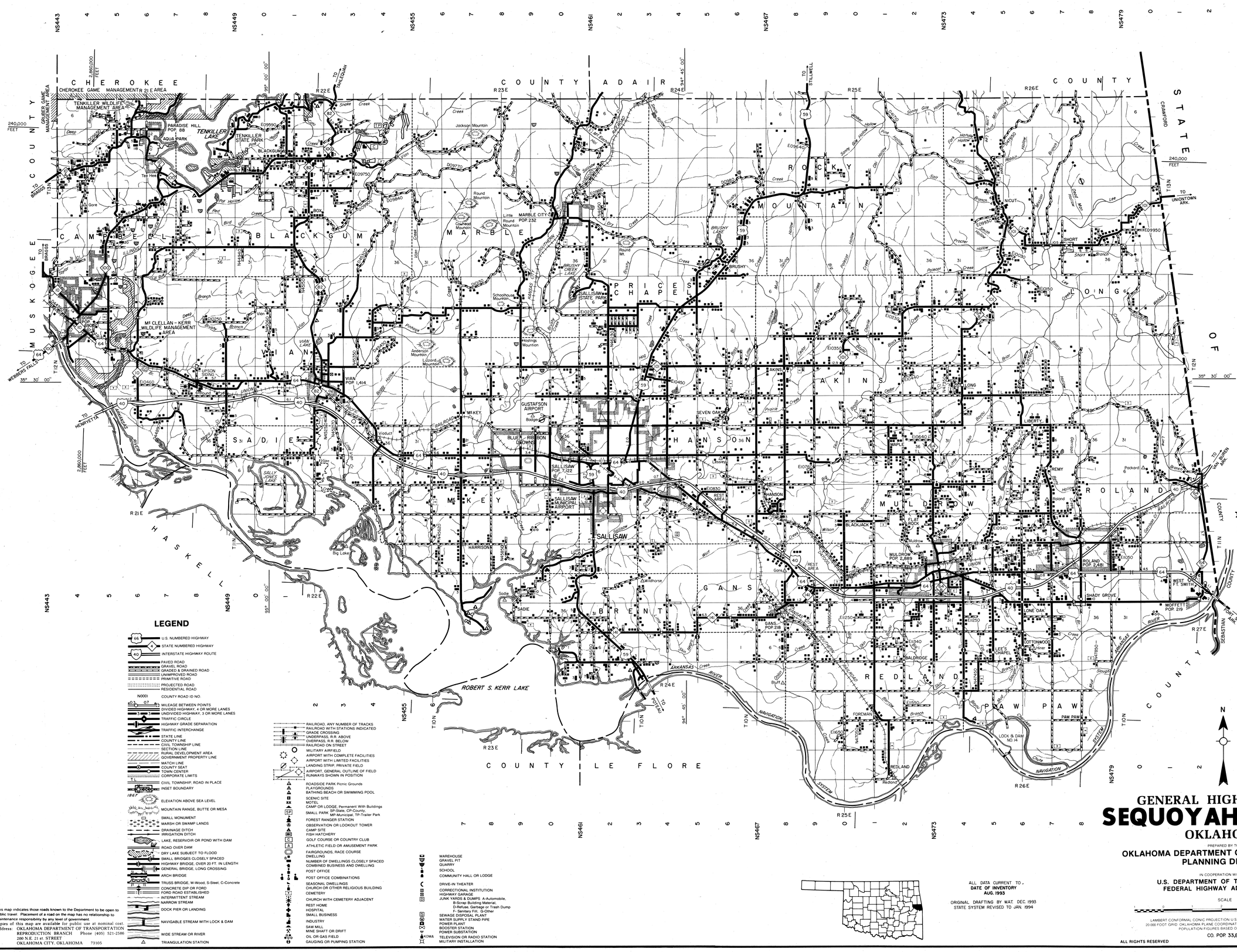

STATE OF KANSAS
CHAUTAUQUA COUNTY
WASHINGTON COUNTY
2,480,000 FEET
2,560,000 FEET
720,000 FEET
600,000 FEET
37°00'00"
90°15'00"
90°00'00"
R 9 E
R 10 E
R 11 E
R 12 E
T 29 N
T 28 N
T 27 N
T 26 N
T 25 N
MATCH LINE
TO CHAUTAUQUA, KANSAS
TO COPAN
TO 36°45'00" BARTLESVILLE
TERRITORY
OKLAHOMA
EAST WAH-SHA-SHE STATE PARK
WEST WAH-SHA-SHE STATE PARK
HULAH LAKE
HULAH WILDLIFE MANAGEMENT AREA
WHIPPOORWILL
CANEY
BOWRING
HERD
BIGHEART
BIG HEART
WESTERN WALL PRIMITIVE AREA
TALL GRASS PRAIRIE PERSERVE
OSAGE WILDLIFE MANAGEMENT AREA
ROCK CREEK UNIT
OSAGE HILLS STATE PARK
STRIKE AXE
PAWHUSKA POP. 3,825
NELAGONEY
BOULANGERVILLE
BARTLESVILLE POP. 34,256 OSAGE CO. 4 WASHINGTON CO. 34,252
FRANK PHILLIPS AIRPORT
WOOLAROC MUSEUM
LAKE HUDSON
BARNSDALL LAKE
DEER LAKE
SUNSET LAKE
SPRING LAKE
LOOKOUT LAKE
PETERS LAKE
DIXON LAKE
RIDGE LAKE
CRYSTAL LAKE
EWO05
EWO11
EWO17
EWO23
NS377
NS383
NS389
EO132
EO135
EO175
EO215
EO238
EO243
EO285
EO295
EO305
EO315
EO325
EO335
EO345
EO355
EO365
EO375
EO385
EO395
EO405
EO415
EO425
EO435
EO445
EO455
EO465
EO475
EO485
EO495
EO505
EO515
EO525
EO535
EO545
EO555
EO565
EO575
EO585
EO595
EO605
EO615
EO625
EO635
EO645
EO655
EO665
EO675
EO685
EO695
EO705
EO715
EO725
EO735
EO745
EO755
EO765
EO775
EO785
EO795
EO805
EO815
EO825
EO835
EO845
EO855
EO865
EO875
EO885
EO895
EO905
EO915
EO925
EO935
EO945
EO955
EO965
EO975
EO985
EO995
EO1005
EO1015
EO1025
EO1035
EO1045
EO1055
EO1065
EO1075
EO1085
EO1095
EO1105
EO1115
EO1125
EO1135
EO1145
EO1155
EO1165
EO1175
EO1185
EO1195
EO1205
EO1215
EO1225
EO1235
EO1245
EO1255
EO1265
EO1275
EO1285
EO1295
EO1305
EO1315
EO1325
EO1335
EO1345
EO1355
EO1365
EO1375
EO1385
EO1395
EO1405
EO1415
EO1425
EO1435
EO1445
EO1455
EO1465
EO1475
EO1485
EO1495
EO1505
EO1515
EO1525
EO1535
EO1545
EO1555
EO1565
EO1575
EO1585
EO1595
EO1605
EO1615
EO1625
EO1635
EO1645
EO1655
EO1665
EO1675
EO1685
EO1695
EO1705
EO1715
EO1725
EO1735
EO1745
EO1755
EO1765
EO1775
EO1785
EO1795
EO1805
EO1815
EO1825
EO1835
EO1845
EO1855
EO1865
EO1875
EO1885
EO1895
EO1905
EO1915
EO1925
EO1935
EO1945
EO1955
EO1965
EO1975
EO1985
EO1995
EO2005
EO2015
EO2025
EO2035
EO2045
EO2055
EO2065
EO2075
EO2085
EO2095
EO2105
EO2115
EO2125
EO2135
EO2145
EO2155
EO2165
EO2175
EO2185
EO2195
EO2205
EO2215
EO2225
EO2235
EO2245
EO2255
EO2265
EO2275
EO2285
EO2295
EO2305
EO2315
EO2325
EO2335
EO2345
EO2355
EO2365
EO2375
EO2385
EO2395
EO2405
EO2415
EO2425
EO2435
EO2445
EO2455
EO2465
EO2475
EO2485
EO2495
EO2505
EO2515
EO2525
EO2535
EO2545
EO2555
EO2565
EO2575
EO2585
EO2595
EO2605
EO2615
EO2625
EO2635
EO2645
EO2655
EO2665
EO2675
EO2685
EO2695
EO2705
EO2715
EO2725
EO2735
EO2745
EO2755
EO2765
EO2775
EO2785
EO2795
EO2805
EO2815
EO2825
EO2835
EO2845
EO2855
EO2865
EO2875
EO2885
EO2895
EO2905
EO2915
EO2925
EO2935
EO2945
EO2955
EO2965
EO2975
EO2985
EO2995
EO3005
EO3015
EO3025
EO3035
EO3045
EO3055
EO3065
EO3075
EO3085
EO3095
EO3105
EO3115
EO3125
EO3135
EO3145
EO3155
EO3165
EO3175
EO3185
EO3195
EO3205
EO3215
EO3225
EO3235
EO3245
EO3255
EO3265
EO3275
EO3285
EO3295
EO3305
EO3315
EO3325
EO3335
EO3345
EO3355
EO3365
EO3375
EO3385
EO3395
EO3405
EO3415
EO3425
EO3435
EO3445
EO3455
EO3465
EO3475
EO3485
EO3495
EO3505
EO3515
EO3525
EO3535
EO3545
EO3555
EO3565
EO3575
EO3585
EO3595
EO3605
EO3615
EO3625
EO3635
EO3645
EO3655
EO3665
EO3675
EO3685
EO3695
EO3705
EO3715
EO3725
EO3735
EO3745
EO3755
EO3765
EO3775
EO3785
EO3795
EO3805
EO3815
EO3825
EO3835
EO3845
EO3855
EO3865
EO3875
EO3885
EO3895
EO3905
EO3915
EO3925
EO3935
EO3945
EO3955
EO3965
EO3975
EO3985
EO3995
EO4005
EO4015
EO4025
EO4035
EO4045
EO4055
EO4065
EO4075
EO4085
EO4095
EO4105
EO4115
EO4125
EO4135
EO4145
EO4155
EO4165
EO4175
EO4185
EO4195
EO4205
EO4215
EO4225
EO4235
EO4245
EO4255
EO4265
EO4275
EO4285
EO4295
EO4305
EO4315
EO4325
EO4335
EO4345
EO4355
EO4365
EO4375
EO4385
EO4395
EO4405
EO4415
EO4425
EO4435
EO4445
EO4455
EO4465
EO4475
EO4485
EO4495
EO4505
EO4515
EO4525
EO4535
EO4545
EO4555
EO4565
EO4575
EO4585
EO4595
EO4605
EO4615
EO4625
EO4635
EO4645
EO4655
EO4665
EO4675
EO4685
EO4695
EO4705
EO4715
EO4725
EO4735
EO4745
EO4755
EO4765
EO4775
EO4785
EO4795
EO4805
EO4815
EO4825
EO4835
EO4845
EO4855
EO4865
EO4875
EO4885
EO4895
EO4905
EO4915
EO4925
EO4935
EO4945
EO4955
EO4965
EO4975
EO4985
EO4995
EO5005
EO5015
EO5025
EO5035
EO5045
EO5055
EO5065
EO5075
EO5085
EO5095
EO5105
EO5115
EO5125
EO5135
EO5145
EO5155
EO5165
EO5175
EO5185
EO5195
EO5205
EO5215
EO5225
EO5235
EO5245
EO5255
EO5265
EO5275
EO5285
EO5295
EO5305
EO5315
EO5325
EO5335
EO5345
EO5355
EO5365
EO5375
EO5385
EO5395
EO5405
EO5415
EO5425
EO5435
EO5445
EO5455
EO5465
EO5475
EO5485
EO5495
EO5505
EO5515
EO5525
EO5535
EO5545
EO5555
EO5565
EO5575
EO5585
EO5595
EO5605
EO5615
EO5625
EO5635
EO5645
EO5655
EO5665
EO5675
EO5685
EO5695
EO5705
EO5715
EO5725
EO5735
EO5745
EO5755
EO5765
EO5775
EO5785
EO5795
EO5805
EO5815
EO5825
EO5835
EO5845
EO5855
EO5865
EO5875
EO5885
EO5895
EO5905
EO5915
EO5925
EO5935
EO5945
EO5955
EO5965
EO5975
EO5985
EO5995
EO6005
EO6015
EO6025
EO6035
EO6045
EO6055
EO6065
EO6075
EO6085
EO6095
EO6105
EO6115
EO6125
EO6135
EO6145
EO6155
EO6165
EO6175
EO6185
EO6195
EO6205
EO6215
EO6225
EO6235
EO6245
EO6255
EO6265
EO6275
EO6285
EO6295
EO6305
EO6315
EO6325
EO6335
EO6345
EO6355
EO6365
EO6375
EO6385
EO6395
EO6405
EO6415
EO6425
EO6435
EO6445
EO6455
EO6465
EO6475
EO6485
EO6495
EO6505
EO6515
EO6525
EO6535
EO6545
EO6555
EO6565
EO6575
EO6585
EO6595
EO6605
EO6615
EO6625
EO6635
EO6645
EO6655
EO6665
EO6675
EO6685
EO6695
EO6705
EO6715
EO6725
EO6735
EO6745
EO6755
EO6765
EO6775
EO6785
EO6795
EO6805
EO6815
EO6825
EO6835
EO6845
EO6855
EO6865
EO6875
EO6885
EO6895
EO6905
EO6915
EO6925
EO6935
EO6945
EO6955
EO6965
EO6975
EO6985
EO6995
EO7005
EO7015
EO7025
EO7035
EO7045
EO7055
EO7065
EO7075
EO7085
EO7095
EO7105
EO7115
EO7125
EO7135
EO7145
EO7155
EO7165
EO7175
EO7185
EO7195
EO7205
EO7215
EO7225
EO7235
EO7245
EO7255
EO7265
EO7275
EO7285
EO7295
EO7305
EO7315
EO7325
EO7335
EO7345
EO7355
EO7365
EO7375
EO7385
EO7395
EO7405
EO7415
EO7425
EO7435
EO7445
EO7455
EO7465
EO7475
EO7485
EO7495
EO7505
EO7515
EO7525
EO7535
EO7545
EO7555
EO7565
EO7575
EO7585
EO7595
EO7605
EO7615
EO7625
EO7635
EO7645
EO7655
EO7665
EO7675
EO7685
EO7695
EO7705
EO7715
EO7725
EO7735
EO7745
EO7755
EO7765
EO7775
EO7785
EO7795
EO7805
EO7815
EO7825
EO7835
EO7845
EO7855
EO7865
EO7875
EO7885
EO7895
EO7905
EO7915
EO7925
EO7935
EO7945
EO7955
EO7965
EO7975
EO7985
EO7995
EO8005
EO8015
EO8025
EO8035
EO8045
EO8055
EO8065
EO8075
EO8085
EO8095
EO8105
EO8115
EO8125
EO8135
EO8145
EO8155
EO8165
EO8175
EO8185
EO8195
EO8205
EO8215
EO8225
EO8235
EO8245
EO8255
EO8265
EO8275
EO8285
EO8295
EO8305
EO8315
EO8325
EO8335
EO8345
EO8355
EO8365
EO8375
EO8385
EO8395
EO8405
EO8415
EO8425
EO8435
EO8445
EO8455
EO8465
EO8475
EO8485
EO8495
EO8505
EO8515
EO8525
EO8535
EO8545
EO8555
EO8565
EO8575
EO8585
EO8595
EO8605
EO8615
EO8625
EO8635
EO8645
EO8655
EO8665
EO8675
EO8685
EO8695
EO8705
EO8715
EO8725
EO8735
EO8745
EO8755
EO8765
EO8775
EO8785
EO8795
EO8805
EO8815
EO8825
EO8835
EO8845
EO8855
EO8865
EO8875
EO8885
EO8895
EO8905
EO8915
EO8925
EO8935
EO8945
EO8955
EO8965
EO8975
EO8985
EO8995
EO9005
EO9015
EO9025
EO9035
EO9045
EO9055
EO9065
EO9075
EO9085
EO9095
EO9105
EO9115
EO9125
EO9135
EO9145
EO9155
EO9165
EO9175
EO9185
EO9195
EO9205
EO9215
EO9225
EO9235
EO9245
EO9255
EO9265
EO9275
EO9285
EO9295
EO9305
EO9315
EO9325
EO9335
EO9345
EO9355
EO9365
EO9375
EO9385
EO9395
EO9405
EO9415
EO9425
EO9435
EO9445
EO9455
EO9465
EO9475
EO9485
EO9495
EO9505
EO9515
EO9525
EO9535
EO9545
EO9555
EO9565
EO9575
EO9585
EO9595
EO9605
EO9615
EO9625
EO9635
EO9645
EO9655
EO9665
EO9675
EO9685
EO9695
EO9705
EO9715
EO9725
EO9735
EO9745
EO9755
EO9765
EO9775
EO9785
EO9795
EO9805
EO9815
EO9825
EO9835
EO9845
EO9855
EO9865
EO9875
EO9885
EO9895
EO9905
EO9915
EO9925
EO9935
EO9945
EO9955
EO9965
EO9975
EO9985
EO9995
EO10005
EO10015
EO10025
EO10035
EO10045
EO10055
EO10065
EO10075
EO10085
EO10095
EO10105
EO10115
EO10125
EO10135
EO10145
EO10155
EO10165
EO10175
EO10185
EO10195
EO10205
EO10215
EO10225
EO10235
EO10245
EO10255
EO10265
EO10275
EO10285
EO10295
EO10305
EO10315
EO10325
EO10335
EO10345
EO10355
EO10365
EO10375
EO10385
EO10395
EO10405
EO10415
EO10425
EO10435
EO10445
EO10455
EO10465
EO10475
EO10485
EO10495
EO10505
EO10515
EO10525
EO10535
EO10545
EO10555
EO10565
EO10575
EO10585
EO10595
EO10605
EO10615
EO10625
EO10635
EO10645
EO10655
EO10665
EO10675
EO10685
EO10695
EO10705
EO10715
EO10725
EO10735
EO10745
EO10755
EO10765
EO10775
EO10785
EO10795
EO10805
EO10815
EO10825
EO10835
EO10845
EO10855
EO10865
EO10875
EO10885
EO10895
EO10905
EO10915
EO10925
EO10935
EO10945
EO10955
EO10965
EO10975
EO10985
EO10995
EO11005
EO11015
EO11025
EO11035
EO11045
EO11055
EO11065
EO11075
EO11085
EO11095
EO11105
EO11115
EO11125
EO11135
EO11145
EO11155
EO11165
EO11175
EO11185
EO11195
EO11205
EO11215
EO11225
EO11235
EO11245
EO11255
EO11265
EO11275
EO11285
EO11295
EO11305
EO11315
EO11325
EO11335
EO11345
EO11355
EO11365
EO11375
EO11385
EO11395
EO11405
EO11415
EO11425
EO11435
EO11445
EO11455
EO11465
EO11475
EO11485
EO11495
EO11505
EO11515
EO11525
EO11535
EO11545
EO11555
EO11565
EO11575
EO11585
EO11595
EO11605
EO11615
EO11625
EO11635
EO11645
EO11655
EO11665
EO11675
EO11685
EO11695
EO11705
EO11715
EO11725
EO11735
EO11745
EO11755
EO11765
EO11775
EO11785
EO11795
EO11805
EO11815
EO11825
EO11835
EO11845
EO11855
EO11865
EO11875
EO11885
EO11895
EO11905
EO11915
EO11925
EO11935
EO11945
EO11955
EO11965
EO11975
EO11985
EO11995
EO12005
EO12015
EO12025
EO12035
EO12045
EO12055
EO12065
EO12075
EO12085
EO12095
EO12105
EO12115
EO12125
EO12135
EO12145
EO12155
EO12165
EO12175
EO12185
EO12195
EO12205
EO12215
EO12225
EO12235
EO12245
EO12255
EO12265
EO12275
EO12285
EO12295
EO12305
EO12315
EO12325
EO12335
EO12345
EO12355
EO12365
EO12375
EO12385
EO12395
EO12405
EO12415
EO12425
EO12435
EO12445
EO12455
EO12465
EO12475
EO12485
EO12495
EO12505
EO12515
EO12525
EO12535
EO12545
EO12555
EO12565
EO12575
EO12585
EO12595
EO12605
EO12615
EO12625
EO12635
EO12645
EO12655
EO12665
EO12675
EO12685
EO12695
EO12705
EO12715
EO12725
EO12735
EO12745
EO12755
EO12765
EO12775
EO12785
EO12795
EO12805
EO12815
EO12825
EO12835
EO12845
EO12855
EO12865
EO12875
EO12885
EO12895
EO12905
EO12915
EO12925
EO12935
EO12945
EO12955
EO12965
EO12975
EO12985
EO12995
EO13005
EO13015
EO13025
EO13035
EO13045
EO13055
EO13065
EO13075
EO13085
EO13095
EO13105
EO13115
EO13125
EO13135
EO13145
EO13155
EO13165
EO13175
EO13185
EO13195
EO13205
EO13215
EO13225
EO13235
EO13245
EO13255
EO13265
EO13275
EO13285
EO13295
EO13305
EO13315
EO13325
EO13335
EO13345
EO13355
EO13365
EO13375
EO13385
EO13395
EO13405
EO13415
EO13425
EO13435
EO13445
EO13455
EO13465
EO13475
EO13485
EO13495
EO13505
EO13515
EO13525
EO13535
EO13545
EO13555
EO13565
EO13575
EO13585
EO13595
EO13605
EO13615
EO13625
EO13635
EO13645
EO13655
EO13665
EO13675
EO13685
EO13695
EO13705
EO13715
EO13725
EO13735
EO13745
EO13755
EO13765
EO13775
EO13785
EO13795
EO13805
EO13815
EO13825
EO13835
EO13845
EO13855
EO13865
EO13875
EO13885
EO13895
EO13905
EO13915
EO13925
EO13935
EO13945
EO13955
EO13965
EO13975
EO13985
EO13995
EO14005
EO14015
EO14025
EO14035
EO14045
EO14055
EO14065
EO14075
EO14085
EO14095
EO14105
EO14115
EO14125
EO14135
EO14145
EO14155
EO14165
EO14175
EO14185
EO14195
EO14205
EO14215
EO14225
EO14235
EO14245
EO14255
EO14265
EO14275
EO14285
EO14295
EO14305
EO14315
EO14325
EO14335
EO14345
EO14355
EO14365
EO14375
EO14385
EO14395
EO14405
EO14415
EO14425
EO14435
EO14445
EO14455
EO14465
EO14475
EO14485
EO14495
EO14505
EO14515
EO14525
EO14535
EO14545
EO14555
EO14565
EO14575
EO14585
EO14595
EO14605
EO14615
EO14625
EO14635
EO14645
EO14655
EO14665
EO14675
EO14685
EO14695
EO14705
EO14715
EO14725
EO14735
EO14745
EO14755
EO14765
EO14775
EO14785
EO14795
EO14805
EO14815
EO14825
EO14835
EO14845
EO14855
EO14865
EO14875
EO14885
EO14895
EO14905
EO14915
EO14925
EO14935
EO14945
EO14955
EO14965
EO14975
EO14985
EO14995
EO15005
EO15015
EO15025
EO15035
EO15045
EO15055
EO15065
EO15075
EO15085
EO15095
EO15105
EO15115
EO15125
EO15135
EO15145
EO15155
EO15165
EO15175
EO15185
EO15195
EO15205
EO15215
EO15225
EO15235
EO15245
EO15255
EO15265
EO15275
EO15285
EO15295
EO15305
EO15315
EO15325
EO15335
EO15345
EO15355
EO15365
EO15375
EO15385
EO15395
EO15405
EO15415
EO15425
EO15435
EO15445
EO15455
EO15465
EO15475
EO15485
EO15495
EO15505
EO15515
EO15525
EO15535
EO15545
EO15555
EO15565
EO15575
EO15585
EO15595
EO15605
EO15615
EO15625
EO15635
EO15645
EO15655
EO15665
EO15675
EO15685
EO15695
EO15705
EO15715
EO15725
EO15735
EO15745
EO15755
EO15765
EO15775
EO15785
EO15795
EO15805
EO15815
EO15825
EO15835
EO15845
EO15855
EO15865
EO15875
EO15885
EO15895
EO15905
EO15915
EO15925
EO15935
EO15945
EO15955
EO15965
EO15975
EO15985
EO15995
EO16005
EO16015
EO16025
EO16035
EO16045
EO16055
EO16065
EO16075
EO16085
EO16095
EO16105
EO16115
EO16125
EO16135
EO16145
EO16155
EO16165
EO16175
EO16185
EO16195
EO16205
EO16215
EO16225
EO16235
EO16245
EO16255
EO16265
EO16275
EO16285
EO16295
EO16305
EO16315
EO16325
EO16335
EO16345
EO16355
EO16365
EO16375
EO16385
EO16395
EO16405
EO16415
EO16425
EO16435
EO16445
EO16455
EO16465
EO16475
EO16485
EO16495
EO16505
EO16515
EO16525
EO16535
EO16545
EO16555
EO16565
EO16575
EO16585
EO16595
EO16605
EO16615
EO16625
EO16635
EO16645
EO16655
EO16665
EO16675
EO16685
EO16695
EO16705
EO16715
EO16725
EO16735
EO16745
EO16755
EO16765
EO16775
EO16785
EO16795
EO16805
EO16815
EO16825
EO16835
EO16845
EO16855
EO16865
EO16875
EO16885
EO16895
EO16905
EO16915
EO16925
EO16935
EO16945
EO16955
EO16965
EO16975
EO16985
EO16995
EO17005
EO17015
EO17025
EO17035
EO17045
EO17055
EO17065
EO17075
EO17085
EO17095
EO17105
EO17115
EO17125
EO17135
EO17145
EO17155
EO17165
EO17175
EO17185
EO17195
EO17205
EO17215
EO17225
EO17235
EO17245
EO17255
EO17265
EO17275
EO17285
EO17295
EO17305
EO17315
EO17325
EO17335
EO17345
EO17355
EO17365
EO17375
EO17385
EO17395
EO17405
EO17415
EO17425
EO17435
EO17445
EO17455
EO17465
EO17475
EO17485
EO17495
EO17505
EO17515
EO17525
EO17535
EO17545
EO17555
EO17565
EO17575
EO17585
EO17595
EO17605
EO17615
EO17625
EO17635
EO17645
EO17655
EO17665
EO17675
EO17685
EO17695
EO17705
EO17715
EO17725
EO17735
EO17745
EO17755
EO17765
EO17775
EO17785
EO17795
EO17805
EO17815
EO17825
EO17835
EO17845
EO17855
EO17865
EO17875
EO17885
EO17895
EO17905
EO17915
EO17925
EO17935
EO17945
EO17955
EO17965
EO17975
EO17985
EO17995
EO18005
EO18015
EO18025
EO18035
EO18045
EO18055
EO18065
EO18075
EO18085
EO18095
EO18105
EO18115
EO18125
EO18135
EO18145
EO18155
EO18165
EO18175
EO18185
EO18195
EO18205
EO18215
EO18225
EO18235
EO18245
EO18255
EO18265
EO18275
EO18285
EO18295
EO18305
EO18315
EO18325
EO18335
EO18345
EO18355
EO18365
EO18375
EO18385
EO18395
EO18405
EO18415
EO18425
EO18435
EO18445
EO18455
EO18465
EO18475
EO18485
EO18495
EO18505
EO18515
EO18525
EO18535
EO18545
EO18555
EO18565
EO18575
EO18585
EO18595
EO18605
EO18615
EO18625
EO18635
EO18645
EO18655
EO18665
EO18675
EO18685
EO18695
EO18705
EO18715
EO18725
EO18735
EO18745
EO18755
EO18765
EO18775
EO18785
EO18795
EO18805
EO18815
EO18825
EO18835
EO18845
EO18855
EO18865
EO18875
EO18885
EO18895
EO18905
EO18915
EO18925
EO18935
EO18945
EO18955
EO18965
EO18975
EO18985
EO18995
EO19005
EO19015
EO19025
EO19035
EO19045
EO19055
EO19065
EO19075
EO19085
EO19095
EO19105
EO19115
EO19125
EO19135
EO19145
EO19155
EO19165
EO19175
EO19185
EO19195
EO19205
EO19215
EO19225
EO19235
EO19245
EO19255
EO19265
EO19275
EO19285
EO19295
EO19305
EO19315
EO19325
EO19335
EO19345
EO19355
EO19365
EO19375
EO19385
EO19395
EO19405
EO19415
EO19425
EO19435
EO19445
EO19455
EO19465
EO19475
EO19485
EO19495
EO19505
EO19515
EO19525
EO19535
EO19545
EO19555
EO19565
EO19575
EO19585
EO19595
EO19605
EO19615
EO19625
EO19635
EO19645
EO19655
EO19665
EO19675
EO19685
EO19695
EO19705
EO19715
EO19725
EO19735
EO19745
EO19755
EO19765
EO19775
EO19785
EO19795
EO19805
EO19815
EO19825
EO19835
EO19845
EO19855
EO19865
EO19875
EO19885
EO19895
EO19905
EO19915
EO19925
EO19935
EO19945
EO19955
EO19965
EO19975
EO19985
EO19995
EO20005
EO20015
EO20025
EO20035
EO20045
EO20055
EO20065
EO20075
EO20085
EO20095
EO20105
EO20115
EO20125
EO20135
EO20145
EO20155
EO20165
EO20175
EO20185
EO20195
EO20205
EO20215
EO20225
EO20235
EO20245
EO20255
EO20265
EO20275
EO20285
EO20295
EO20305
EO20315
EO20325
EO20335
EO20345
EO20355
EO20365
EO20375
EO20385
EO20395
EO20405
EO20415
EO20425
EO20435
EO20445
EO20455
EO20465
EO20475
EO20485
EO20495
EO20505
EO20515
EO20525
EO20535
EO20545
EO20555
EO20565
EO20575
EO20585
EO20595
EO20605
EO20615
EO20625
EO20635
EO20645
EO20655
EO20665
EO20675
EO20685
EO20695
EO20705
EO20715
EO20725
EO20735
EO20745
EO20755
EO20765
EO20775
EO20785
EO20795
EO20805
EO20815
EO20825
EO20835
EO20845
EO20855
EO20865
EO20875
EO20885
EO20895
EO20905
EO20915
EO20925
EO20935
EO20945
EO20955
EO20965
EO20975
EO20985
EO20995
EO21005
EO21015
EO21025
EO21035
EO21045
EO21055
EO21065
EO21075
EO21085
EO21095
EO21105
EO21115
EO21125
EO21135
EO21145
EO21155
EO21165
EO21175
EO21185
EO21195
EO21205
EO21215
EO21225
EO21235
EO21245
EO21255
EO21265
EO21275
EO21285
EO21295
EO21305
EO21315
EO21325
EO21335
EO21345
EO21355
EO21365
EO21375
EO21385
EO21395
EO21405
EO21415
EO21425
EO21435
EO21445
EO21455
EO21465
EO21475
EO21485
EO21495
EO21505
EO21515
EO21525
EO21535
EO21545
EO21555
EO21565
EO21575
EO21585
EO21595
EO21605
EO21615
EO21625
EO21635
EO21645
EO21655
EO21665
EO21675
EO21685
EO21695
EO21705
EO21715
EO21725
EO21735
EO21745
EO21755
EO21765
EO21775
EO21785
EO21795
EO21805
EO21815
EO21825
EO21835
EO21845
EO21855
EO21865
EO21875
EO21885
EO21895
EO21905
EO21915
EO21925
EO21935
EO21945
EO21955
EO21965
EO21975
EO21985
EO21995
EO22005
EO22015
EO22025
EO22035
EO22045
EO22055
EO22065
EO22075
EO22085
EO22095
EO22105
EO22115
EO22125
EO22135
EO22145
EO22155
EO22165
EO22175
EO22185
EO22195
EO22205
EO22215
EO22225
EO22235
EO22245
EO22255
EO22265
EO22275
EO22285
EO22295
EO22305
EO22315
EO22325
EO22335
EO22345
EO22355
EO22365
EO22375
EO22385
EO22395
EO22405
EO22415
EO22425
EO22435
EO22445
EO22455
EO22465
EO22475
EO22485
EO22495
EO22505
EO22515
EO22525
EO22535
EO22545
EO22555
EO22565
EO22575
EO22585
EO22595
EO22605
EO22615
EO22625
EO22635
EO22645
EO22655
EO22665
EO22675
EO22685
EO22695
EO22705
EO22715
EO22725
EO22735
EO22745
EO22755
EO22765
EO22775
EO22785
EO22795
EO22805
EO22815
EO22825
EO22835
EO22845
EO22855
EO22865
EO22875
EO22885
EO22895
EO22905
EO22915
EO22925
EO22935
EO22945
EO22955
EO22965
EO22975
EO22985
EO22995
EO23005
EO23015
EO23025
EO23035
EO23045
EO23055
EO23065
EO23075
EO23085
EO23095
EO23105
EO23115
EO23125
EO23135
EO23145
EO23155
EO23165
EO23175
EO23185
EO23195
EO23205
EO23215
EO23225
EO23235
EO23245
EO23255
EO23265
EO23275
EO23285
EO23295
EO23305
EO23315
EO23325
EO23335
EO23345
EO23355
EO23365
EO23375
EO23385
EO23395
EO23405
EO23415
EO23425
EO23435
EO23445
EO23455
EO23465
EO23475
EO23485
EO23495
EO23505
EO23515
EO23525
EO23535
EO23545
EO23555
EO23565
EO23575
EO23585
EO23595
EO23605
EO23615
EO23625
EO23635
EO23645
EO23655
EO23665
EO23675
EO23685
EO23695
EO23705
EO23715
EO23725
EO23735
EO23745
EO23755
EO23765
EO23775
EO23785
EO23795
EO23805
EO23815
EO23825
EO23835
EO23845
EO23855
EO23865
EO23875
EO23885
EO23895
EO23905
EO23915
EO23925
EO23935
EO23945
EO23955
EO23965
EO23975
EO23985
EO23995
EO24005
EO24015
EO24025
EO24035
EO24045
EO24055
EO24065
EO24075
EO24085
EO24095
EO24105
EO24115
EO24125
EO24135
EO24145
EO24155
EO24165
EO24175
EO24185
EO24195
EO24205
EO24215
EO24225
EO24235
EO24245
EO24255
EO24265
EO24275
EO24285
EO24295
EO24305
EO24315
EO24325
EO24335
EO24345
EO24355
EO24365
EO24375
EO24385
EO24395
EO24405
EO24415
EO24425
EO24435
EO24445
EO24455
EO24465
EO24475
EO24485
EO24495
EO24505
EO24515
EO24525
EO24535
EO24545
EO24555
EO24565
EO24575
EO24585
EO24595
EO24605
EO24615
EO24625
EO24635
EO24645
EO24655
EO24665
EO24675
EO24685
EO24695
EO24705
EO24715
EO24725
EO24735
EO24745
EO24755
EO24765
EO24775
EO24785
EO24795
EO24805
EO24815
EO24825
EO24835
EO24845
EO24855
EO24865
EO24875
EO24885
EO24895
EO24905
EO24915
EO24925
EO24935
EO24945
EO24955
EO24965
EO24975
EO24985
EO24995
EO25005
EO25015
EO25025
EO25035
EO25045
EO25055
EO25065
EO25075
EO25085
EO25095
EO25105
EO25115
EO25125
EO25135
EO25145
EO25155
EO25165
EO25175
EO25185
EO25195
EO25205
EO25215
EO25225
EO25235
EO25245
EO25255
EO25265
EO25275
EO25285
EO25295
EO25305
EO25315
EO25325
EO25335
EO25345
EO25355
EO25365
EO25375
EO25385
EO25395
EO25405
EO25415
EO25425
EO25435
EO25445
EO25455
EO25465
EO25475
EO25485
EO25495
EO25505
EO25515
EO25525
EO25535
EO25545
EO25555
EO25565
EO25575
EO25585
EO25595
EO25605
EO25615
EO25625
EO25635
EO25645
EO25655
EO25665
EO25675
EO25685
EO25695
EO25705
EO25715
EO25725
EO25735
EO25745
EO25755
EO25765
EO25775
EO25785
EO25795
EO25805
EO25815
EO25825
EO25835
EO25845
EO25855
EO25865
EO25875
EO25885
EO25895
EO25905
EO25915
EO25925
EO25935
EO25945
EO25955
EO25965
EO25975
EO25985
EO25995
EO26005
EO26015
EO26025
EO26035
EO26045
EO26055
EO26065
EO26075
EO26085
EO26095
EO26105
EO26115
EO26125
EO26135
EO26145
EO26155
EO26165
EO26175
EO26185
EO26195
EO26205
EO26215
EO26225
EO26235
EO26245
EO26255
EO26265
EO26275
EO26285
EO26295
EO26305
EO26315
EO26325
EO26335
EO26345
EO26355
EO26365
EO26375
EO26385
EO26395
EO26405
EO26415
EO26425
EO26435
EO26445
EO26455
EO26465
EO26475
EO26485
EO26495
EO26505
EO26515
EO26525
EO26535
EO26545
EO26555
EO26565
EO26575
EO26585
EO26595
EO26605
EO26615
EO26625
EO26635
EO26645
EO26655
EO26665
EO26675
EO26685
EO26695
EO26705
EO26715
EO26725
EO26735
EO26745
EO26755
EO26765
EO26775
EO26785
EO26795
EO26805
EO26815
EO26825
EO26835
EO26845
EO26855
EO26865
EO26875
EO26885
EO26895
EO26905
EO26915
EO26925
EO26935
EO26945
EO26955
EO26965
EO26975
EO26985
EO26995
EO27005
EO27015
EO27025
EO27035
EO27045
EO27055
EO27065
EO27075
EO27085
EO27095
EO27105
EO27115
EO27125
EO27135
EO27145
EO27155
EO27165
EO27175
EO27185
EO27195
EO27205
EO27215
EO27225
EO27235
EO27245
EO27255
EO27265
EO27275
EO27285
EO27295
EO27305
EO27315
EO27325
EO27335
EO27345
EO27355
EO27365
EO27375
EO27385
EO27395
EO27405
EO27415
EO27425
EO27435
EO27445
EO27455
EO27465
EO27475
EO27485
EO27495
EO27505
EO27515
EO27525
EO27535
EO27545
EO27555
EO27565
EO27575
EO27585
EO27595
EO27605
EO27615
EO27625
EO27635
EO27645
EO27655
EO27665
EO27675
EO27685
EO27695
EO27705
EO27715
EO27725
EO27735
EO27745
EO27755
EO27765
EO27775
EO27785
EO27795
EO27805
EO27815
EO27825
EO27835
EO27845
EO27855
EO27865
EO27875
EO27885
EO27895
EO27905
EO27915
EO27925
EO27935
EO27945
EO27955
EO27965
EO27975
EO27985
EO27995
EO28005
EO28015
EO28025
EO28035
EO28045
EO28055
EO28065
EO28075
EO28085
EO28095
EO28105
EO28115
EO28125
EO28135
EO28145
EO28155
EO28165
EO28175
EO28185
EO28195
EO28205
EO28215
EO28225
EO28235
EO28245
EO28255
EO28265
EO28275
EO28285
EO28295
EO28305
EO28315
EO28325
EO28335
EO28345
EO28355
EO28365
EO28375
EO28385
EO28395
EO28405
EO28415
EO28425
EO28435
EO28445
EO28455
EO28465
EO28475
EO28485
EO28495
EO28505
EO28515
EO28525
EO28535
EO28545
EO28555
EO28565
EO28575
EO28585
EO28595
EO28605
EO28615
EO28625
EO28635
EO28645
EO28655
EO28665
EO28675
EO28685
EO28695
EO28705
EO28715
EO28725
EO28735
EO28745
EO28755
EO28765
EO28775
EO28785
EO28795
EO28805
EO28815
EO28825
EO28835
EO28845
EO28855
EO28865
EO28875
EO28885
EO28895
EO28905
EO28915
EO28925
EO28935
EO28945
EO28955
EO28965
EO28975
EO28985
EO28995
EO29005
EO29015
EO29025
EO29035
EO29045
EO29055
EO29065
EO29075
EO29085
EO29095
EO29105
EO29115
EO29125
EO29135
EO29145
EO29155
EO29165
EO29175
EO29185
EO29195
EO29205
EO29215
EO29225
EO29235
EO29245
EO29255
EO29265
EO29275
EO29285
EO29295
EO29305
EO29315
EO29325
EO29335
EO29345
EO29355
EO29365
EO29375
EO29385
EO29395
EO29405
EO29415
EO29425
EO29435
EO29445
EO29455
EO29465
EO29475
EO29485
EO29495
EO29505
EO29515
EO29525
EO29535
EO29545
EO29555
EO29565
EO29575
EO29585
EO29595
EO29605
EO29615
EO29625
EO29635
EO29645
EO29655
EO29665
EO29675
EO29685
EO29695
EO29705
EO29715
EO29725
EO29735
EO29745
EO29755
EO29765
EO29775
EO29785
EO29795
EO29805
EO29815
EO29825
EO29835
EO29845
EO29855
EO29865
EO29875
EO29885
EO29895
EO29905
EO29915
EO29925
EO29935
EO29945
EO29955
EO29965
EO29975
EO29985
EO29995
EO30005
EO30015
EO30025
EO30035
EO30045
EO30055
EO30065
EO30075
EO30085
EO30095
EO30105
EO30115
EO30125
EO30135
EO30145
EO30155
EO30165
EO30175
EO30185
EO30195
EO30205
EO30215
EO30225
EO30235
EO30245
EO30255
EO30265
EO30275
EO30285
EO30295
EO30305
EO30315
EO30325
EO30335
EO30345
EO30355
EO30365
EO30375
EO30385
EO30395
EO30405
EO30415
EO30425
EO30435
EO30445
EO30455
EO30465
EO30475
EO30485
EO30495
EO30505
EO30515
EO30525
EO30535
EO30545
EO30555
EO30565
EO30575
EO30585
EO30595
EO30605
EO30615
EO30625
EO30635
EO30645
EO30655
EO30665
EO30675
EO30685
EO30695
EO30705
EO30715
EO30725
EO30735
EO30745
EO30755
EO30765
EO30775
EO30785
EO30795
EO30805
EO30815
EO30825
EO30835
EO30845
EO30855
EO30865
EO30875
EO30885

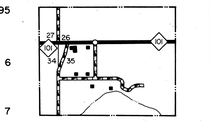


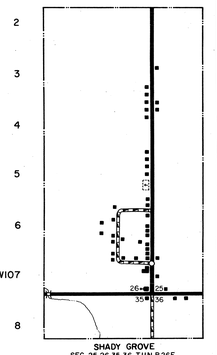
Copies of this map are available for public use at nominal cost.
Address: OKLAHOMA DEPARTMENT OF TRANSPORTATION
REPRODUCTION BRANCH Phone (405) 521-2586
200 N.E. 21 st. STREET
OKLAHOMA CITY, OKLAHOMA 73105

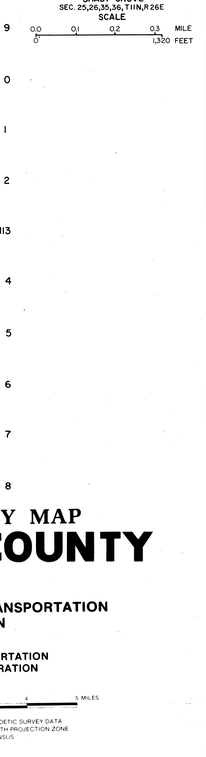
This map indicates those roads known to the Department to be open to public travel. Placement of a road on the map has no relationship to maintenance responsibility by any level of government.

NOT FOR RESALE









LEGEND

- U.S. NUMBERED HIGHWAY
- STATE NUMBERED HIGHWAY
- INTERSTATE HIGHWAY ROUTE
- PAVED ROAD
- GRAVEL ROAD
- GRADED & DRAINED ROAD
- UNIMPROVED ROAD
- PRIMITIVE ROAD
- PROJECTED ROAD
- RESIDENTIAL ROAD
- N0001 COUNTY ROAD ID NO.
- MILEAGE BETWEEN POINTS
- DIVIDED HIGHWAY, 4 OR MORE LANES
- UNDIVIDED HIGHWAY, 3 OR MORE LANES
- TRAFFIC CIRCLE
- HIGHWAY GRADE SEPARATION
- TRAFFIC INTERCHANGE
- STATE LINE
- COUNTY LINE
- CIVIL TOWNSHIP LINE
- SECTION LINE
- RURAL DEVELOPMENT AREA
- GOVERNMENT PROPERTY LINE
- MATCH LINE
- COUNTY SEAT
- TOWN CENTER
- CORPORATE LIMITS
- T.L. CIVIL TOWNSHIP, ROAD IN PLACE
- INSET BOUNDARY
- 1867 ELEVATION ABOVE SEA LEVEL
- MOUNTAIN RANGE, BUTTE OR MESA
- SMALL MONUMENT
- MARSH OR SWAMP LANDS
- DRAINAGE DITCH
- IRRIGATION DITCH
- LAKE, RESERVOIR OR POND WITH DAM
- ROAD OVER DAM
- DRY LAKE SUBJECT TO FLOOD
- SMALL BRIDGES CLOSELY SPACED
- HIGHWAY BRIDGE, OVER 20 FT. IN LENGTH
- GENERAL BRIDGE, LONG CROSSING
- ARCH BRIDGE
- TRUSS BRIDGE, W-Wood, S-Steel, C-Concrete
- CONCRETE DIP OR FORD
- FORD ROAD ESTABLISHED
- INTERMITTENT STREAM
- NARROW STREAM
- DOCK PIER OR LANDING
- NAVIGABLE STREAM WITH LOCK & DAM
- WIDE STREAM OR RIVER
- TRIANGULATION STATION

- RAILROAD, ANY NUMBER OF TRACKS
- RAILROAD WITH STATIONS INDICATED
- GRADE CROSSING
- UNDERPASS, R.R. ABOVE
- OVERPASS, R.R. BELOW
- RAILROAD ON STREET
- MILITARY AIRFIELD
- AIRPORT WITH COMPLETE FACILITIES
- AIRPORT WITH LIMITED FACILITIES
- LANDING STRIP, PRIVATE FIELD
- AIRPORT, GENERAL OUTLINE OF FIELD
- RUNWAYS SHOWN IN POSITION
- ROADSIDE PARK Picnic Grounds
- PLAYGROUNDS
- BATHING BEACH OR SWIMMING POOL
- SCENIC SITE
- MOTEL
- CAMP OR LODGE, Permanent With Buildings
- SMALL PARK, SP-State, CP-County, MP-Municipal, TP-Trailer Park
- FOREST RANGER STATION
- OBSERVATION OR LOOKOUT TOWER
- CAMP SITE
- FISH HATCHERY
- GOLF COURSE OR COUNTRY CLUB
- ATHLETIC FIELD OR AMUSEMENT PARK
- FAIRGROUNDS, RACE COURSE
- DWELLING
- NUMBER OF DWELLINGS CLOSELY SPACED
- COMBINED BUSINESS AND DWELLING
- POST OFFICE
- POST OFFICE COMBINATIONS
- SEASONAL DWELLINGS
- CHURCH OR OTHER RELIGIOUS BUILDING
- CEMETERY
- CHURCH WITH CEMETERY ADJACENT
- REST HOME
- HOSPITAL
- SMALL BUSINESS
- INDUSTRY
- SAW MILL
- MINE SHAFT OR DRIFT
- OIL OR GAS FIELD
- GAUGING OR PUMPING STATION

- WAREHOUSE
- GRAVEL PIT
- QUARRY
- SCHOOL
- COMMUNITY HALL OR LODGE
- DRIVE-IN THEATER
- CORRECTIONAL INSTITUTION
- HIGHWAY GARAGE
- JUNK YARDS & DUMPS A-Automobile, B-Scrap Building Material, D-Refuse, Garbage or Trash Dump F- Sanitary Fill, O-Other
- SEWAGE DISPOSAL PLANT
- WATER SUPPLY STAND PIPE
- POWER PLANT
- BOOSTER STATION
- POWER SUBSTATION
- KOMA TELEVISION OR RADIO STATION
- MILITARY INSTALLATION

This map indicates those roads known to the Department to be open to public travel. Placement of a road on the map has no relationship to maintenance responsibility by any level of government.

Copies of this map are available for public use at nominal cost.
Address: OKLAHOMA DEPARTMENT OF TRANSPORTATION
REPRODUCTION BRANCH Phone (405) 521-2586
200 N.E. 21 st. STREET
OKLAHOMA CITY, OKLAHOMA 73105

GENERAL HIGHWAY MAP
SEQUOYAH COUNTY
OKLAHOMA

PREPARED BY THE
OKLAHOMA DEPARTMENT OF TRANSPORTATION
PLANNING DIVISION

IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

ALL DATA CURRENT TO -
DATE OF INVENTORY
AUG. 1993

ORIGINAL DRAFTING BY W.A.T. DEC. 1993
STATE SYSTEM REVISED TO JAN. 1994

SCALE
0 4 8 MILES

LAMBERT CONFORMAL CONIC PROJECTION U.S COAST & GEODETIC SURVEY DATA
20,000 FOOT GRID: OKLAHOMA PLANE COORDINATE SYSTEM NORTH PROJECTION ZONE
POPULATION FIGURES BASED ON **1990** U.S. CENSUS

CO. POP 33,828

ALL RIGHTS RESERVED

NOT FOR RESALE

TULSA

This map indicates those roads known to the Department to be open to public travel. Placement of a road on the map has no relationship to maintenance responsibility by any level of government.

Copies of this map are available for public use at nominal cost.
Address: OKLAHOMA DEPARTMENT OF TRANSPORTATION
PLANNING DIVISION
200 N.E. 21st. STREET
OKLAHOMA CITY, OKLAHOMA 73105

(1) HASKELL PL.
(2) HASKELL ST.
(3) WACO AVE.
(4) VANCOUVER AVE.
(5) GOLDEN ST.
(6) FAIRVIEW ST.
(7) EDISON ST.
(8) COUNTRY CLUB DR.
(9) OSAGE DR.
(10) DENVER AVE.
(11) CHEYENNE AVE.
(12) BOULDER AVE.
(13) LANSING AVE.
(14) NORFOLK AVE.
(15) ARCHARD ST.
(16) QUAKER AVE.
(17) QUINCY AVE.
(18) ROCKFORD AVE.
(19) ADMIRAL PL.
(20) OWASSO AVE.
(21) NEWPORT AVE.
(22) FRANKFORT AVE.
(23) MADISON AVE.
(24) CAROLINA AVE.
(25) CINCINNATI AVE.
(26) BALTIMORE AVE.
(27) CARTHAGE AVE.
(28) ELWOOD AVE.
(29) FRISCO AVE.
(30) INDIAN AVE.
(31) RIVERSIDE DR.
(32) JACKSON AVE.
(33) LAWTON AVE.
(34) OLYMPIA AVE.
(35) PHOENIX AVE.
(36) MAYBELLE AVE.
(37) ROSEDALE AVE.
(38) SANTA FE AVE.
(39) TACOMA AVE.
(40) ADMIRAL BLVD.
(41) ARCHER ST.
(42) ARCHER PL.
(43) BRADY ST.
(44) CAMERON ST.

ENLARGED AREA

LEGEND

- U.S. NUMBERED HIGHWAY
- STATE NUMBERED HIGHWAY
- INTERSTATE HIGHWAY ROUTE
- PAVED ROAD
- GRAVEL ROAD
- GRADED & DRAINED ROAD
- UNIMPROVED ROAD
- PRIMITIVE ROAD
- PROJECTED ROAD
- RESIDENTIAL ROAD
- N0001 COUNTY ROAD ID NO.
- 0.3 0.7 MILEAGE BETWEEN POINTS
- DIVIDED HIGHWAY, 4 OR MORE LANES
- UNDIVIDED HIGHWAY, 3 OR MORE LANES
- TRAFFIC CIRCLE
- HIGHWAY GRADE SEPARATION
- TRAFFIC INTERCHANGE
- STATE LINE
- COUNTY LINE
- CIVIL TOWNSHIP LINE
- SECTION LINE
- RURAL DEVELOPMENT AREA
- GOVERNMENT PROPERTY LINE
- MATCH LINE
- COUNTY SEAT
- TOWN CENTER
- CORPORATE LIMITS
- T.L. CIVIL TOWNSHIP, ROAD IN PLACE
- INSET BOUNDARY
- 1867 ELEVATION ABOVE SEA LEVEL
- MOUNTAIN RANGE, BUTTE OR MESA
- SMALL MONUMENT
- MARSH OR SWAMP LANDS
- DRAINAGE DITCH
- IRRIGATION DITCH
- LAKE, RESERVOIR OR POND WITH DAM
- ROAD OVER DAM
- DRY LAKE SUBJECT TO FLOOD
- SMALL BRIDGES CLOSELY SPACED
- HIGHWAY BRIDGE, OVER 20 FT. IN LENGTH
- GENERAL BRIDGE, LONG CROSSING
- ARCH BRIDGE
- TRUSS BRIDGE, W-Wood, S-Steel, C-Concrete
- CONCRETE DIP OR FORD
- FORD ROAD ESTABLISHED
- INTERMITTENT STREAM
- NARROW STREAM
- DOCK PIER OR LANDING
- NAVIGABLE STREAM WITH LOCK & DAM
- WIDE STREAM OR RIVER
- TRIANGULATION STATION

- RAILROAD, ANY NUMBER OF TRACKS
- RAILROAD WITH STATIONS INDICATED
- GRADE CROSSING
- UNDERPASS, R.R. ABOVE
- OVERPASS, R.R. BELOW
- RAILROAD ON STREET
- MILITARY AIRFIELD
- AIRPORT WITH COMPLETE FACILITIES
- AIRPORT WITH LIMITED FACILITIES
- LANDING STRIP, PRIVATE FIELD
- AIRPORT, GENERAL OUTLINE OF FIELD RUNWAYS SHOWN IN POSITION
- ROADSIDE PARK Picnic Grounds
- PLAYGROUNDS
- BATHING BEACH OR SWIMMING POOL
- SCENIC SITE
- MOTEL
- CAMP OR LODGE, Permanent With Buildings
- SP SMALL PARK SP-State, CP-County, MP-Municipal, TP-Trailer Park
- FOREST RANGER STATION
- OBSERVATION OR LOOKOUT TOWER
- CAMP SITE
- FISH HATCHERY
- C GOLF COURSE OR COUNTRY CLUB
- A ATHLETIC FIELD OR AMUSEMENT PARK
- FAIRGROUNDS, RACE COURSE
- DWELLING
- NUMBER OF DWELLINGS CLOSELY SPACED
- COMBINED BUSINESS AND DWELLING
- POST OFFICE
- POST OFFICE COMBINATIONS
- SEASONAL DWELLINGS
- CHURCH OR OTHER RELIGIOUS BUILDING
- CEMETERY
- CHURCH WITH CEMETERY ADJACENT
- REST HOME
- HOSPITAL
- SMALL BUSINESS
- INDUSTRY
- SAW MILL
- MINE SHAFT OR DRIFT
- OIL OR GAS FIELD
- GAUGING OR PUMPING STATION
- WAREHOUSE
- GRAVEL PIT
- QUARRY
- SCHOOL
- COMMUNITY HALL OR LODGE
- DRIVE-IN THEATER
- CORRECTIONAL INSTITUTION
- HIGHWAY GARAGE
- D JUNK YARDS & DUMPS A-Automobile, B-Scrap Building Material, D-Refuse, Garbage or Trash Dump F- Sanitary Fill, G-Other
- SEWAGE DISPOSAL PLANT
- WATER SUPPLY STAND PIPE
- POWER PLANT
- BOOSTER STATION
- POWER SUBSTATION
- KOMA TELEVISION OR RADIO STATION
- MILITARY INSTALLATION

ALL RIGHTS RESERVED

ALL DATA CURRENT TO DATE OF INVENTORY JULY 1991

ORIGINAL DRAFTING BY W.T. JULY 1993
STATE SYSTEM REVISED TO MAY 1998

GENERAL HIGHWAY MAP
TULSA COUNTY
OKLAHOMA

PREPARED BY THE
OKLAHOMA DEPARTMENT OF TRANSPORTATION
PLANNING DIVISION

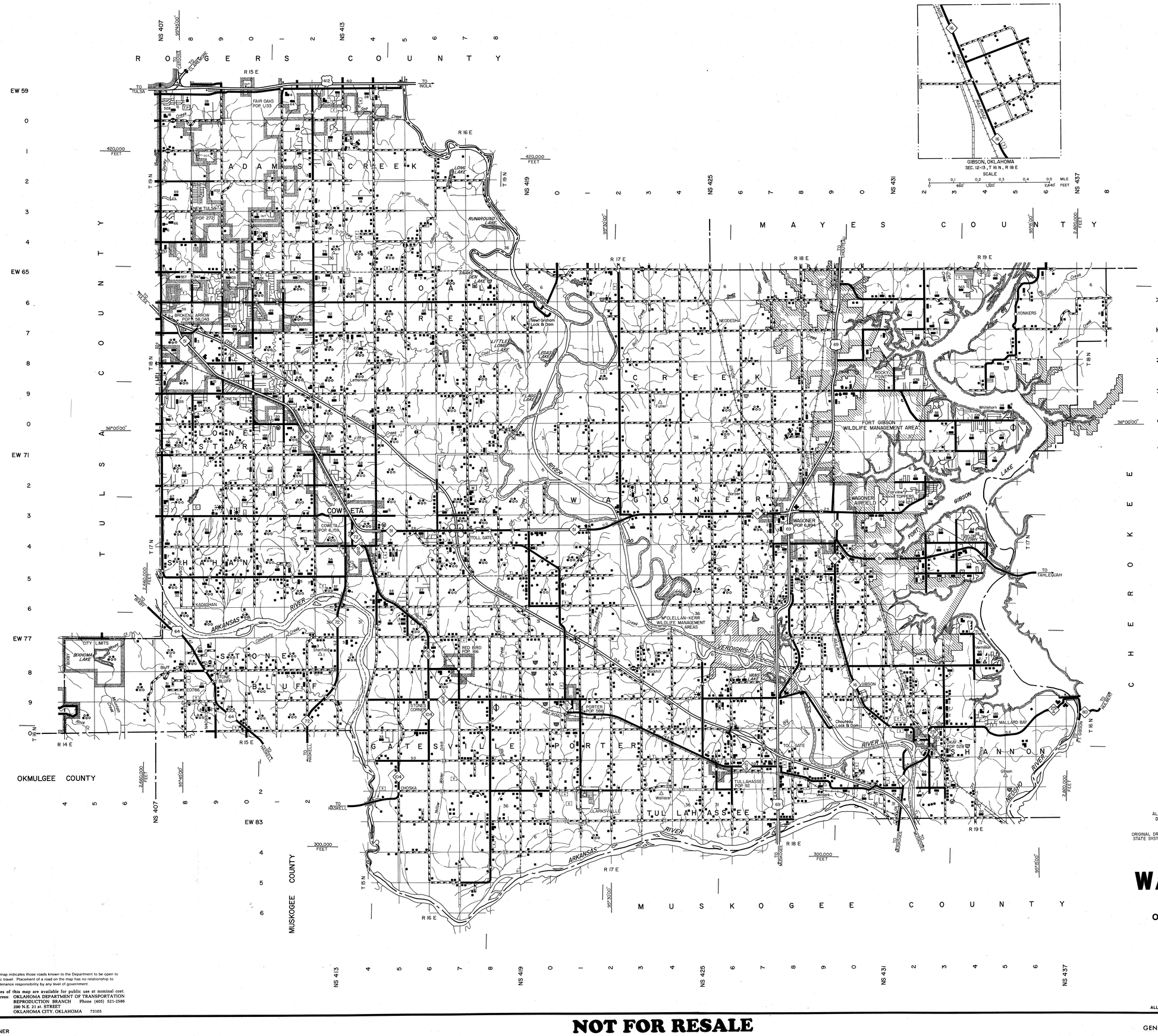
IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

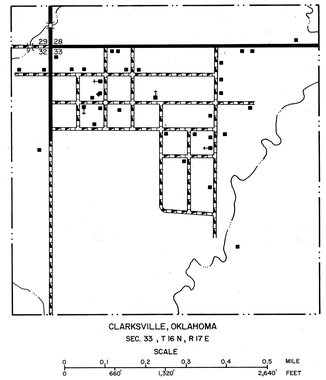
SCALE 1 ½ 0 1 2 3 4 5 MILES

LAMBERT CONFORMAL CONIC PROJECTION U.S COAST & GEODETIC SURVEY DATA
20,000 FOOT GRID; OKLAHOMA PLANE COORDINATE SYSTEM NORTH PROJECTION ZONE.
POPULATION FIGURES BASED ON 1990 U.S. CENSUS
COUNTY POP. 503,341

NOT FOR RESALE

GENERAL HIGHWAY MAP TULSA COUNTY OKLAHOMA





LEGEND

- U.S. NUMBERED HIGHWAY
- STATE NUMBERED HIGHWAY
- INTERSTATE HIGHWAY ROUTE
- PAVED ROAD
- GRAVEL ROAD
- GRADED & DRAINED ROAD
- UNIMPROVED ROAD
- PRIMITIVE ROAD
- PROJECTED ROAD
- RESIDENTIAL ROAD
- N0001 COUNTY ROAD ID NO.
- 0.3 0.7 MILEAGE BETWEEN POINTS
- DIVIDED HIGHWAY, 4 OR MORE LANES
- UNDIVIDED HIGHWAY, 3 OR MORE LANES
- TRAFFIC CIRCLE
- HIGHWAY GRADE SEPARATION
- TRAFFIC INTERCHANGE
- STATE LINE
- COUNTY LINE
- CIVIL TOWNSHIP LINE
- SECTION LINE
- RURAL DEVELOPMENT AREA
- GOVERNMENT PROPERTY LINE
- MATCH LINE
- COUNTY SEAT
- TOWN CENTER
- CORPORATE LIMITS
- TL CIVIL TOWNSHIP, ROAD IN PLACE
- INSET BOUNDARY
- 1867 ELEVATION ABOVE SEA LEVEL
- MOUNTAIN RANGE, BUTTE OR MESA
- SMALL MONUMENT
- MARSH OR SWAMP LANDS
- DRAINAGE DITCH
- IRRIGATION DITCH
- LAKE, RESERVOIR OR POND WITH DAM
- ROAD OVER DAM
- DRY LAKE SUBJECT TO FLOOD
- SMALL BRIDGES CLOSELY SPACED
- HIGHWAY BRIDGE, OVER 20 FT. IN LENGTH
- GENERAL BRIDGE, LONG CROSSING
- ARCH BRIDGE
- TRUSS BRIDGE, W-Wood, S-Steel, C-Concrete
- CONCRETE DIP OR FORD
- FORD ROAD ESTABLISHED
- INTERMITTENT STREAM
- NARROW STREAM
- DOCK PIER OR LANDING
- NAVIGABLE STREAM WITH LOCK & DAM
- WIDE STREAM OR RIVER
- TRIANGULATION STATION

- RAILROAD, ANY NUMBER OF TRACKS
- RAILROAD WITH STATIONS INDICATED
- GRADE CROSSING
- UNDERPASS, R.R. ABOVE
- OVERPASS, R.R. BELOW
- RAILROAD ON STREET
- MILITARY AIRFIELD
- AIRPORT WITH COMPLETE FACILITIES
- AIRPORT WITH LIMITED FACILITIES
- LANDING STRIP, PRIVATE FIELD
- AIRPORT, GENERAL OUTLINE OF FIELD
- RUNWAYS SHOWN IN POSITION
- ROADSIDE PARK Picnic Grounds
- PLAYGROUNDS
- BATHING BEACH OR SWIMMING POOL
- SCENIC SITE
- MOTEL
- CAMP OR LODGE, Permanent With Buildings
- SP-State, CP-County,
- SP SMALL PARK MP-Municipal, TP-Trailer Park
- FOREST RANGER STATION
- OBSERVATION OR LOOKOUT TOWER
- CAMP SITE
- FISH HATCHERY
- G GOLF COURSE OR COUNTRY CLUB
- A ATHLETIC FIELD OR AMUSEMENT PARK
- FAIRGROUNDS, RACE COURSE
- DWELLING
- NUMBER OF DWELLINGS CLOSELY SPACED
- COMBINED BUSINESS AND DWELLING
- POST OFFICE
- POST OFFICE COMBINATIONS
- SEASONAL DWELLINGS
- CHURCH OR OTHER RELIGIOUS BUILDING
- CEMETERY
- CHURCH WITH CEMETERY ADJACENT
- REST HOME
- HOSPITAL
- SMALL BUSINESS
- INDUSTRY
- SAW MILL
- MINE SHAFT OR DRIFT
- OIL OR GAS FIELD
- GAUGING OR PUMPING STATION
- WAREHOUSE
- GRAVEL PIT
- QUARRY
- SCHOOL
- COMMUNITY HALL OR LODGE
- DRIVE-IN THEATER
- CORRECTIONAL INSTITUTION
- HIGHWAY GARAGE
- JUNK YARDS & DUMPS A-Automobile, B-Scrap Building Material, D-Refuse, Garbage or Trash Dump F- Sanitary Fill, G-Other
- S SEWAGE DISPOSAL PLANT
- WATER SUPPLY STAND PIPE
- POWER PLANT
- BOOSTER STATION
- POWER SUBSTATION
- KOMA TELEVISION OR RADIO STATION
- MILITARY INSTALLATION

ALL DATA CURRENT TO DATE OF INVENTORY FEBRUARY, 1992

ORIGINAL DRAFTING BY L.R.K. OCTOBER, 1993
STATE SYSTEM REVISED TO JANUARY, 1994

GENERAL HIGHWAY MAP
WAGONER COUNTY
OKLAHOMA

PREPARED BY THE
OKLAHOMA DEPARTMENT OF TRANSPORTATION
PLANNING DIVISION

IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

SCALE
1 0 1 2 3 4 5 MILES

LAMBERT CONFORMAL CONIC PROJECTION U.S COAST & GEODETIC SURVEY DATA
20,000 FOOT GRID: OKLAHOMA PLANE COORDINATE SYSTEM NORTH PROJECTION ZONE
POPULATION FIGURES BASED ON 1990 U.S. CENSUS
CO. POP. 47,883

ALL RIGHTS RESERVED

This map indicates those roads known to the Department to be open to public travel. Placement of a road on the map has no relationship to maintenance responsibility by any level of government.

Copies of this map are available for public use at nominal cost.
Address: OKLAHOMA DEPARTMENT OF TRANSPORTATION
REPRODUCTION BRANCH Phone (405) 521-2586
200 N.E. 21 st. STREET
OKLAHOMA CITY, OKLAHOMA 73105

NOT FOR RESALE